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ACHIEVING OPTIMUM UTILIZATION OF ANCILLARY SERVICES

An Annotated Bibliography

Second Edition
October 1980

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Health Care Financing Administration
Health Standards and Quality Bureau
Division of Peer Review

HCFA

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October 1980

Compiled by
JoAnne DuChez and Marion Torchia

This bibliography was first published in June 1979 under the title "Peer Review of Ancillary Services." Both the first and second editions were compiled at the National Health Standards and Quality Information Clearinghouse, which is operated under contract to the Health Standards and Quality Bureau, Health Care Financing Administration (Contract No. HCFA 500-79-0025) by Capital Systems Group, Inc., 11301 Rockville Pike, Kensington, MD 20795. The opinions and statements contained in this publication are those of the authors and may not reflect the views of the Department of Health and Human Services.

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TABLE OF CONTENTS

		Page
	Introduction	i
I.	General Overviews	1
II.	Acute Care Inpatient Setting	11
	Laboratory Services	13
	Blood Transfusion Services	23
	Radiology	25
	Radiation Therapy and Nuclear Medicine	35
	Pharmaceutical Services	36
	Anesthesiology	58
	Respiratory Therapy	59
	Rehabilitation Therapy	62
	Social Services	70
III.	Hospital Outpatient Facilities	75
IV.	Long Term Care Facilities	81
	Pharmaceutical Services	83
	Rehabilitation Therapy	86
	Index to Abstracts	87
	Author Index	89
	Subject Index	95

INTRODUCTION

The PSRO statute, specifically Section 1154(b) of the Social Security Act, explicitly requires PSROs to review ancillary services as part of their general mandate to review all health care services for which reimbursement is sought under the Act. Ancillary services review offers PSROs an excellent opportunity to have an impact on both the quality and cost of care, as unnecessary or inappropriate use of these services represents unnecessary risks to patients as well as excessive costs in dollars, personnel time, and use of health facilities.

To aid PSROs in implementing review, the Division of Peer Review in 1979 authorized the compilation of an annotated bibliography on the subject. The first edition, entitled "Peer Review of Ancillary Services," appeared in June 1979; this second edition brings the discussion up to date and sharpens its focus.

Intended for an audience directly involved in PSRO review and similar quality assurance activities, and also for persons with a more general interest in the underlying health policy issues, this bibliography is envisioned as a collection of literature that (1) analyzes the problem of misuse of ancillary services and (2) suggests solutions to the problem. Included in the first category of literature are discussions about indications for various services, descriptions of patterns of utilization, analyses of practitioners' motivations in prescribing services, and discussions about the effect of financial incentives. Included in the second category of literature--the proposed solutions--are models of quality assurance programs, descriptions of ongoing programs, criteria to be used in review, discussions about the value of education, descriptions of educational programs, and proposals for reform of pricing and reimbursement systems.

Following PSRO Transmittal No. 54, the term "ancillary services" is defined as "those services incident to a hospitalization," whether or not separately itemized, and whether provided by the hospital itself or by contract with an outside agency or individual. Laboratory procedures, x-ray examinations, pharmacy services, and physical therapy services are examples of ancillary services; on the other hand, room and board, nursing, dietary and physician services are explicitly excluded from the definition. Emergency rooms and intensive care units are not considered ancillary services, but rather specialized units of the larger health facility; consequently, PSRO review of the necessity and appropriateness of utilizing these units is considered part of admission or continued stay review. This does not, however, preclude PSRO review of ancillary services delivered in these units.

"Quality assurance" is understood in the sense intended in the PSRO legislation and regulations: assessment by health professionals of the medical necessity and appropriateness of health services, with corrective action and follow-up as required. Quality assurance is a generic

term, including the process of utilization review as well as concurrent and retrospective studies of the quality of care.

The terms evaluation, quality control, and quality assurance appear in the literature in several different contexts. There are quality control systems whose sole purpose is to monitor the technical aspects of a procedure; such systems neither judge the rightness of performing the procedure nor evaluate the effect on the patient. There are also administrative control systems, which monitor the efficiency of delivery of services, costs and prices, and the performance of personnel. Descriptions of technical and administrative systems are outside the scope of this bibliography; nevertheless, their prominence in the literature on ancillary services is worth noting. If the quality of a service is viewed only in technical and administrative terms, this may indicate that no one has yet examined the effect of that service on the quality and cost of health care.

In addition to a preliminary section containing general overviews of the subject, the bibliography is divided into three major sections, corresponding to three major settings where PSRO review is being implemented: the acute care inpatient setting, hospital-based outpatient facilities, and long term care facilities. Within these settings, citations have been grouped according to categories of diagnostic and therapeutic services, as outlined in the table of contents.

The volume of available literature and the focus of interest vary greatly from setting to setting and from service to service. It is not possible to present here a definitive or all-inclusive summary of the state of the art in ancillary services review; nevertheless, a few examples of current trends are noted in the following paragraphs.

Understandably, the largest body of writing relates to the acute care setting, where PSRO review was first implemented. However, the volume of literature is unevenly distributed among the hospital departments. In certain areas, particularly laboratory services, radiology, and pharmacy, a substantial body of writing gives evidence of a long-standing interest on the part of professionals and the public in achieving more appropriate utilization. In other fields public discussion has been initiated more recently.

Each of the major hospital ancillary departments has its own particular concerns; however, certain major issues cut across departmental lines. A concerted effort is underway to define what is meant by appropriate utilization and to demonstrate its relationship to the outcome of care. For example, respiratory care physicians along with respiratory therapists have recently developed sample criteria for use in the review of respiratory services.

The tendency of practitioners to order diagnostic tests on a routine basis is coming under critical scrutiny. Research is being done on factors that influence practitioners' behavior, and efforts are being made to educate them about the limitations of diagnostic tests and to train

them in medical decision-making. If education fails, monetary disincentives and restrictions on the use of tests are being proposed as alternatives.

There is considerable interest in measuring the effectiveness of new and expensive diagnostic devices, such as computerized axial tomography (CAT scanning). The proponents of the CAT scanner argue that it is an effective substitute for invasive techniques, but critics contend that in practice it is often simply an adjunct to other diagnostic procedures. Restrictions on its use are being instituted through the planning process and some limitations on reimbursement are already in effect.

At least in the acute care setting, most discussions of utilization are concerned about overutilization; there is little indication in the literature that underutilization is perceived as a serious problem. One author cautions that overzealous limitations on the use of services might deprive some patients of optimal care, while another points out instances of failure to order follow-up laboratory tests. And some professional groups--pharmacists, social workers, and physical therapists, for example--have been urging that they be given a larger role in patient care. In general, however, there is little substantial discussion of underutilization, and no serious research is underway on how to identify or counteract the tendency.

Nonetheless, most professional groups are urging that the goal of controlling utilization be kept secondary to the more important goal of ensuring good care. Many of them--pharmacists, specialists in rehabilitation, hospital social workers, and others--are working to develop coordinated systems of patient care management and patient care evaluation.

Each profession is attempting to define its role in the review process and lay the groundwork for participation in interdisciplinary review programs. Hospital pharmacists, for example, distinguish between "peer review of pharmacy services," wherein pharmacists examine the internal workings of their operation, and "drug utilization review," wherein they cooperate with prescribing practitioners in coordinating and monitoring drug therapy. Social workers are likewise developing an interdisciplinary approach to patient care management and review. In general, health care practitioners other than physicians are insisting that quality assurance must not be limited to peer review of care rendered by physicians.

Discussions that focus specifically on the outpatient setting are not yet numerous, though it is possible that quality assurance activities in the hospital-based outpatient facilities are being reported in conjunction with discussions of inpatient acute care. Those discussions that do focus on outpatient care are for the most part restricted to a few services: laboratory tests, radiology, and pharmacy. There is considerable current interest in the utilization of services in emergency rooms.

There is a small but growing body of literature relating to long term care facilities. The emphasis here is definitely not on cost control but on efforts to improve the quality of care through closer monitoring by health professionals. A major issue is the misuse of drugs: errors in administration of medication, polypharmacy without adequate consideration of possible drug interactions, and excessive prescription of psychotropic drugs. Pharmacists are urging that nursing homes employ them as consultants to prevent these practices.

It is intended that this bibliography be an accurate reflection of current discussion and that it be useful to those who are seeking guidance in developing review programs. We welcome your comments.

I. GENERAL OVERVIEWS

I. GENERAL OVERVIEWS

Beezley, Deborah; Burmeister, R. William; and Carter, Joan. "Support Service Evaluation: Part I." Quality Review Bulletin 6, No. 1 (January 1980):23-25. NHSQIC #01300.

This is the first of a series of articles on review of care provided by support services. In this first article, the authors describe the beginning stages of evaluation: identifying possible problems in patient care; selecting topics for review; and determining study objectives. In subsequent articles, the authors will present the topics, objectives, and criteria selected by specific support services, will describe study results and assessment of quality assurance efforts, and will examine the relationships between support service evaluations and other aspects of patient care and quality assurance. In particular, articles will focus not only on individual support service evaluations, but also on the integration of these and other quality assurance activities within a health care facility.

Beezley, Deborah; Tabel, Claire; and Kordick, Mary. "Support Service Evaluation: Part II." Quality Review Bulletin 6, No. 4 (April 1980):8-12. NHSQIC #01355.

This article, second in a series, reviews various patient care problems scheduled for review by 14 support services--including anesthesia, laboratory, pharmacy, occupational and physical therapy, respiratory therapy, radiology, and social services--at three midwest facilities. The reasons for examining the problem, the scope of planned evaluation, and the expected results are presented.

Carels, Edward J. and Tabatabai, Cheryl. "Increased Utilization of Laboratory Tests and X-Rays: Effect on Quality and Cost of Health Care." Qualtiy Review Bulletin 6, No. 6 (June 1980):5-10. NHSQIC #01654.

It is a common but questionable assumption that more care--more tests, more surgery, more drugs--equals better care. There is a point beyond which the result of more care is often inefficiency, excessive cost, and heightened risk of iatrogenic disease. Studies have shown that excesses involving laboratory testing and the use of x-rays are widespread. Laboratory costs account for 25 percent of all health costs and are increasing at a faster rate than other hospital costs. Studies have indicated that routine admission screening tests, which are performed in 90 percent of all U.S. hospitals, provide no discernable improvements in health care, encourage subsequent testing, and increase hospital costs. Among the reasons suggested

for the increase in the use of laboratory tests and x-rays in recent years are the increased utilization of tests in teaching hospitals, a fear of malpractice lawsuits which has led to the practice of defensive medicine, increase in third party reimbursement and other financial incentives, and the inability of physicians to properly understand the costs and appropriately use the results of ancillary services. Overutilization could probably be reduced if medical students were better taught to make discriminating diagnostic and management decisions and to order tests accordingly. Physicians should be made aware that the absence of laboratory testing has not been responsible for a significant number of malpractice suits. Financial incentives for overutilization must be reduced. Claims review by third party payers can prove effective if it is aimed at discouraging payment for unproven or redundant procedures unlikely to provide useful additional information. The public must be made aware that the failure to order tests and x-rays does not indicate inadequate care, but may in fact represent the most efficient and cost-effective care. Individual health facilities can contribute by setting standards for appropriate utilization, by conducting patient care evaluations to identify deviations from these standards, and by instituting programs of staff education.

Garg, Mohan L.; Gliebe, Werner A.; and Elkhatib, Mounir B. "Extent of Defensive Medicine: Some Empirical Evidence." Legal Aspects of Medical Practice 6, No. 2 (February 1978):25-29. NHSQIC #80704.

The extent to which physicians add to the cost of health care by practicing positive defensive medicine (prescribing tests and procedures to avert possible charges of negligence) is illustrated in a study in which residents at a hospital kept records in a diary of the diagnostic tests and procedures they prescribed and the reasons for so doing. Results showed that in cases of mental disorders 29 percent of laboratory tests and nearly 50 percent of x-rays were requested for defensive medical reasons. For other diseases the percentages were not so high but high enough to be a significant factor in hospital costs.

Hernandez, Lyla. "Conducting Multidisciplinary and Interdisciplinary Medical Care Evaluation Studies (MCEs)." U.S. Health Care Financing Administration, Office of the Administrator, General Memorandum 01-80, 1979. NHSQIC #01089.

The focus for implementing Medical Care Evaluation studies (MCEs) has shifted from monodisciplinary audits to audits involving more than a single discipline. Many of those who have participated in multidisciplinary audits are enthusiatic about the ability of these approaches to improve patient care. The five factors crucial to the successful implementation of multidisciplinary MCE programs in hospitals are: education of health care professionals in the MCE study

methodology; coordination of all MCE activities; a cooperative environment among health care disciplines; administrative support; and careful planning of the implementation process. Organizational structures used in implementing multidisciplinary or interdisciplinary MCEs vary in terms of how the committees are organized, whether these committees are standing or ad hoc, and how disciplines are chosen to participate in the MCE. There are basically two committee structures which can be used to implement interdisciplinary MCEs; committees organized by department or service; or a single hospital-wide committee. The structure commonly used to implement multidisciplinary MCEs is that of committees established by department or discipline. Hospitals should thoroughly consider the advantages and disadvantages attached to each type of structure and committee to select the appropriate organizational structure. Each institution should consider the resources available for MCE, the amount of MCE activity needed, and the long and short range goals for the MCEs.

Hernandez, Lyla. "Involvement of Health Care Practitioners Other Than Physicians in Quality Assurance Activities: A Literature Review." U.S. Health Care Financing Administration, Office of the Administrator, General Memorandum 01-80, 1979. NHSQIC #01102.

The literature regarding the involvement of health care practitioners other than physicians in quality assurance activities concentrates on four elements: the attitudes of various health care practitioners toward non-physician involvement in quality assurance; methods to implement such involvement; obstacles that hinder involvement in Medical Care Evaluation studies (MCEs); and the implementation of two successful multidisciplinary MCE programs. Most of the literature supports and encourages the involvement of non-physician health care professionals in quality assurance efforts. The approaches proposed for this involvement are numerous and varied, but the major emphasis in health care evaluation is placed on MCEs. Detailed structure of multidisciplinary participation in MCEs has not yet been presented in the literature. Obstacles to implementing multidisciplinary MCEs include: educating participants to the MCE methodology; defining the role and responsibilities of each discipline in providing patient care; building respect among disciplines; resolving questions of jurisdiction and responsibility for the achievement of criteria; creating a favorable attitude toward the audit process itself; and determining what structures in what settings will facilitate implementation. Although the literature has addressed many questions about multidisciplinary audits, the answers are far from conclusive and more multidisciplinary audit systems must be analyzed and evaluated.

Kassirer, Jerome P. and Pauker, Steven G. "Should Diagnostic Testing be Regulated?" [Editorial] Journal of the American Medical Association 299, No. 17 (October 16, 1978):947-49. NHSQIC #90194.

Because diagnostic tests are expensive and frequently used inappropriately, it is logical to ask whether they should be regulated. The potential mechanisms of control are easy to enumerate: economic incentives directed at physicians, restrictions on settings where tests may be performed; restraints on hospitals' and physicians' budgets; constraints based on physicians' qualifications; and retrospective review by experts. But regulation can be costly and stultifying; it can hinder the development of new clinical applications and result in suboptimal care to patients who do not fit rigid bureaucratic categories. The authors of this editorial suggest as an alternative the education of physicians in medical decision-making, based on probability theory and decision analysis, including cost-benefit analysis. Such a program should begin at the outset of clinical training and be reinforced during residency and thereafter. The editors of medical journals can contribute by publishing guidelines for the application of diagnostic tests, perhaps in newsletters comparable to the Medical Letter. Impressive benefits have accrued from accurate, non-invasive tests; on the other hand, the costs of well intentioned but misguided regulation could well be incalculable.

Knowlton, H.C. "Making the Ancillary Audit Work." Hospital Medical Staff 6, No. 11 (November 1977):19-24. NHSQIC #71080.

At the Santa Rosa Medical Center in San Antonio, Texas, a comprehensive program of ancillary services review was built upon the audit system already functioning in the hospital's major clinical departments. Completed clinical audits which invited study of the involvement of ancillary services were selected for a follow-up study. In order to involve the entire hospital in a single inquiry, the various ancillary services were audited simultaneously and from the same charts; in this way the effect of each service could be measured in relation to all others. To inform the ancillary services personnel about the purpose of the audit and the procedures to be followed, a comprehensive workshop was held with a single diagnosis service as an example of auditing technique. The program has been enthusiastically received and its effect has been gratifying. Deficiencies were revealed in the content of orders for physical therapy and radiology; it was also discovered that older physicians tend not to be well informed about inhalation therapy. The duplication of orders for CBC and serology was also detected and corrected. Such audits can bring otherwise isolated ancillary departments into a healthy interrelationship with the institution of which they are a part.

Martin, Samuel P.; Donaldson, Magruder C.; London, C. David; Peterson, Osler L.; and Colton, Theodore. "Inputs into Coronary Care During Thirty Years: A Cost-Effectiveness Study." Annals of Internal Medicine 81, No. 3 (September 1974):289-93. NHSQIC #40727.

A retrospective study over a 30-year interval measured changing patterns of inputs into the care of patients hospitalized with myocardial infarction. There was a dramatic increase in frequency of chemical laboratory tests, roentgenograms, and bacteriological examinations. These quantities had both statistically significant linear and quadratic regression components, indicating an accelerated increase over time. There has been a linear increase in electrocardiograms, sedative medication, and days of oxygen therapy. With these changes in input, there have been no significant changes in the duration of hospitalization or in-hospital mortality.

Rix, D.B. and Stump, Gregory. "Is There Duplication of Diagnostic Test Results?" Canadian Medical Association Journal 112 (January 25, 1975):237-44. NHSQIC #90286.

A study was done at the Lion's Gate Hospital in Vancouver, British Columbia, to test conventional wisdom that diagnostic work is unnecessarily duplicated at the time of hospital admission. Tests performed on 1,189 patients one week before and one week after admission were examined. Instances of duplication were divided into categories of service for closer study, and borderline cases were submitted to outside experts in the relevant fields. Minimal unnecessary duplication was found: 0.6 percent for laboratory tests, 1.1 percent for x-rays, and none at all for electrocardiograms. Nevertheless, some duplication could be avoided by encouraging communication with the hospital of the results of tests performed in community-based facilities; likewise hospitals should relay their findings to the community labs. Laboratories should standardize their methods, normal values, and reporting forms to expedite the flow of diagnostic information; radiology and cardiology services should investigate analogous possibilities. However, the findings of this study do not justify the tremendous cost of a central data bank for storage and retrieval of diagnostic information.

Thompson, Richard E. "Determining the Necessity for Routine Preoperative Laboratory Tests and X-Rays." Quality Review Bulletin 5, No. 10 (October 1979):15-17. NHSQIC #00228.

Cooperative quality assurance efforts between PSROs and regional health care facilities can be effective in identifying and solving problems in patient care. A program designed by the Illinois Hospital Research and Education Foundation to evaluate preoperative laboratory tests and x-rays can serve as a model to study issues relevant to quality and cost of patient care. Some basic steps in the proce-

dure are: identify a problem and its relation to quality care; determine what data are needed and how they can be gathered and displayed for analysis; formulate assessment criteria; draw conclusions; devise and implement solutions; formulate plans for restudy or monitoring; and report findings. A regional approach under PSRO guidance increases the amount and scope of available data, allows for broader comparisons, and yet protects confidentiality. Such a study also fulfills the PSRO medical care evaluation requirement and the JCAH's quality assurance standard.

Wagner, Judith. Ancillary Services Review and PSROs: What Can the Demonstration Programs Tell Us: Final Report. Washington, D.C.: Urban Institute, August 1978.

This report examines ten demonstration projects in ancillary services review (ASR) funded by the Health Care Financing Administration, and concludes that, though still in an early stage of implementation, the projects are yielding insights that should be useful to PSROs designing similar programs. The author outlines a model process of ASR. The first step in ASR is the identification of appropriate problems for review; the entire success of a program depends upon the wisdom of this choice. The review itself can be conducted by any of a variety of methods. Claims review can identify widely aberrant patterns of medical practice, but cannot detect more subtle deficiencies in the quality of care. Concurrent review is useful chiefly for ancillary services delivered over an extended period of time. Prior review can perform an important gatekeeping function; to be cost effective it should focus on high-cost or high-risk procedures. Special retrospective studies like MCEs depend upon widely accepted criteria of care, and are hindered by a lack of research on the effectiveness of particular procedures--the controversy over fetal monitoring is an illustration. Whatever review methods are used, strategies must be developed to bring about a change in behavior--through either education or denial of payment. The demonstration sites are gaining valuable experience in the gathering and handling of data; they should be required to evaluate the costs and reliability of the systems they are using. HSQB, in funding future demonstrations, should encourage more formal evaluation programs using control groups, before/after comparisons, and tracers. Ultimately a system should be devised to measure the cost-effectiveness of ASR; for the present only the framework of such an analysis can be outlined.

Wendorf, Barbara. "In the Forefront." Quality Review Bulletin 6, No. 4 (April 1980):13-14. NHSQIC #01352.

An overview of support service quality assurance plans is presented based on the problems chosen for evaluation and analyses and presented in "Support Service Evaluation: Part II," Beezley, et al. It reveals that documentation in patient records and paperwork requirements seem far from the minds of these support service personnel.

Rather, the defined problems and approaches to investigation indicate a serious attempt to grapple with professional concerns that have a direct impact on patient care. The problems chosen for review also indicate a range of professional concerns--from treatment of specific patient conditions to preventive care, from communication among disciplines to departmental cost consciousness.

II. ACUTE CARE INPATIENT SETTING

LABORATORY SERVICES

Burke, M. Desmond. "Laboratory Tests: Basic Concepts and Realistic Expectations." Postgraduate Medicine 63, No. 4 (April 1978):53-55, 58, 60. NHSQIC #90192.

To inaugurate a series of articles on the ordering and interpretation of laboratory tests, the author explains basic terms used to characterize a test's technical reliability and diagnostic value. "Accuracy" and "precision" are measures of reliability, while "sensitivity" and "specificity" measure diagnostic value. The results of testing an entire population can be expressed in a "frequency distribution" curve; in the absence of such information a physician must rely on "normal limits," defined as the central 95 percent of test results from a group of healthy persons. A test's predictive value is influenced by the prevalence of the disease in question, so that a "false positive" result is less likely when a disease is suspected clinically. Biochemical profiles are best used to test initial hypotheses, whereas more specific test strategies should be chosen in the later phases of the diagnostic process to confirm or rule out the presence of particular diseases. By choosing tests appropriate to particular clinical decisions, and by making full use of the data obtained, physicians can save time and money as they practice truly scientific medicine.

College of American Pathologists. "Report on the Quality Assurance Programs of the College of American Pathologists." American Journal of Clinical Pathologists 72, No. 2(S), Supplement (August 1979).

The College of American Pathologists (CAP) provides clinical laboratories with two self-standing but interrelated quality assurance programs: a Survey Program and a Quality Assurance Service. This annual journal supplement report on quality assurance contains papers produced by several committees of and consultants to the programs. The goal of the programs is to assure that patients are provided with the most reliable clinical laboratory data possible; with this in mind a series of interlaboratory comparisons have been conducted, and the methods and findings thereof are reported here. Papers are arranged by discipline: clinical chemistry, hematology, microbiology, etc.; but several articles discuss general questions relating to the accuracy and precision of laboratory procedures. An effort has been made to obtain a longitudinal perspective, and, in general, the reports document an overall improvement in laboratory quality over the past decade.

Counts, George W. "Review and Control of Antimicrobial Usage in Hospitalized Patients: A Recommended Collaborative Approach." Journal of the American Medical Association 238, No. 20 (November 14, 1977):2170-72. CSG #80338.

The Joint Commission on Accreditation of Hospitals (JCAH) has established standards for infection control requiring hospitals to evaluate periodically their use of antibiotics. This article points out the undesirable effects of antibiotics and suggests alternative approaches to utilization, monitoring, and control. One method of review is the prospective study; this can be a study of all patients receiving a particular antibiotic, or of all patients admitted with a particular disease or having a certain surgical procedure. The direction of the study can be set by the medical staff; it can then be carried out by the hospital's infection control staff, with the cooperation of the pharmacy and the microbiology laboratory. A basic requirement is a set of criteria for antibiotic usage. There should be a review of pharmacy data on utilization and costs, of hospital infection rates, and of patterns of bacterial resistance to antibiotics. An alternative to the prospective study is retrospective review of patient records by a multidisciplinary committee. Any review method must include follow-up studies to assure the correction of abuses. No single approach is effective for all hospitals, but a collaborative effort of some kind can accomplish the objectives of all concerned with antibiotic use in the hospital.

Eisenberg, John M. "Educational Program to Modify Laboratory Use by House Staff." Hospital Medical Staff 52, No. 7 (July 1977):578-81. NHSQIC #70750.

An earlier study showed that the prothrombin time determination is overutilized as a routine admission laboratory test. In the present study the investigator evaluated the effectiveness of an educational program in decreasing utilization of the prothrombin time determination by house staff physicians at a teaching hospital. Six months after the educational program, use of the prothrombin time determination as a routine admission test had decreased significantly from 87 percent to 55 percent. Eighteen months after the educational program, the use of this test by the study group had returned to initial levels. These results emphasize the need to measure the long-term outcome of educational programs aimed at modifying the clinical behavior of physicians and to institute follow-up programs to ensure that an educational effort will have a lasting effect.

Eisenberg, John M. and Goldfarb, S. "Clinical Usefulness of Measuring Prothrombin Time as a Routine Admission Test." Clinical Chemistry 22 (1976):1644-47. NHSQIC #70751.

A questionnaire indicating the presence of a history or physical findings consistent with liver disease or bleeding disorders was

completed by house officers on 301 admissions to a Veterans Administration medical service. Each patient had prothrombin time determined on admission. Only two of 107 patients for whom the prothrombin time was measured as a screening test had an abnormal result and one of these was normal when repeated. Of 73 patients with a history of alcoholism but no other pertinent case history or physical examination results, only one had an abnormal prothrombin time. Of the remaining 121 patients who had a pertinent history or physical examination, 41 had an abnormal admission prothrombin time. The authors conclude that measurement of prothrombin time adds little information to that obtained by history and physical examination in screening for liver disease and coagulation defects unless the patient has specific clinical evidence of liver disease, anticoagulation, or other conditions predisposing to bleeding disorders.

Eisenberg, John M.; Rose, John D.; and Weinstein, Allan V. "Routine Blood Cultures from Febrile Outpatients: Use in Detecting Bacteremia." Journal of the American Medical Association 236, No. 25 (December 20, 1976):2863-65. NHSQIC #70745.

Of 565 febrile patients examined in the emergency room of a metropolitan hospital, 210 had blood samples cultured (37 percent). Bacteremia was present in nine of 86 patients who were admitted to the hospital but in only one of 124 patients who were not admitted (P less than .005). Thus, approximately 5 percent of febrile adult outpatients had bacteremia, and these patients were usually admitted before the results of the culture were known. Since positive cultures were found so infrequently in patients not admitted and were, therefore, of little value in guiding the treatment of these patients, the authors conclude that use of routine blood cultures to screen for bacteremia is unnecessary for febrile adult outpatients who are not admitted to the hospital.

Eisenberg, John M.; Williams, Sankey V.; Garner, Lois; Viale, Richard; and Smits, Helen. "Computer-Based Audit to Detect and Correct Overutilization of Laboratory Tests." Medical Care 15, No. 11 (November 1977):915-21. NHSQIC #80130.

The computerized laboratory reporting system of the Hospital of the University of Pennsylvania was modified to identify patients undergoing repetitive testing. The charts of these patients were audited, using explicit criteria, to determine whether multiple studies were justified. During the control period 51 percent of the charts audited for multiple determinations of lactic dehydrogenase revealed overuse. During the study period, when physicians were notified if overuse was found, 65 percent of the charts showed overuse. This difference was not significant. A simultaneous, undisclosed audit of calcium determinations also showed no change between the periods.

Therefore, this method is effective in detecting and measuring overuse of the laboratory. It is a method which is easily adaptable to a hospital's computerized laboratory reporting system, and it can be applied without a computer. However, the program of notification and education of physicians is not effective in reducing overuse. More effective methods of modifying physicians' use of laboratory tests need to be developed.

Eisenberg, John M.; Williams, Sakey V.; and Pascals, Linda A. "An Educational Program for Reducing the Overutilization of Diagnostic Procedures." Annual Conference on Research in Medical Education 18 (November 1979):403-05. NHSQIC #01292.

An educational program was designed to encourage the house staff of a university hospital to reduce the overutilization of diagnostic procedures. Because many of the reasons for excessive testing appeared to be matters related to inexperience and poorly developed habits, the program was designed to provide physicians with relevant technical information, awareness of the financial consequences of medical decisions, and awareness of their own cost-generating behavior. Presentations at monthly medical management conferences have stressed the point that the expert physician requires fewer and less expensive techniques in making a diagnosis. A monthly newsletter concerning diagnostic services utilization is distributed, and members of several university and hospital departments have contributed articles. A program of feedback for house staff has been developed based on criteria for appropriate repetitive use of ten diagnostic tests. A computer system detects those cases in which multiple determinations take place within a specified time, and then notifies the appropriate physician that he may be guilty of excessive testing. Medical students are also exposed to a similar cost containment program.

Fineberg, Harvey V. "Clinical Chemistries: The High Cost of Low-Cost Diagnostic Tests." Medical Technologies: The Culprit Behind Health Care Costs? Proceedings of the Sun Valley Forum on National Health, Sun Valley, Idaho, August 1-5, 1977. (PHS) 79-3216. U.S., National Center for Health Services Research and U.S., Bureau of Health Planning, 1979. NHSQIC #01291.

The dramatic increase in the use of chemistry tests and laboratory services requires greater efforts to increase efficiency, reduce costs, improve quality, and make more appropriate use of chemistry laboratory services. Increased use of chemistry tests has been caused by such factors as increased insurance coverage through Medicare and Medicaid, positive financial incentives, and the practice of defensive medicine. There appear to be substantial cost inefficiencies in the clinical laboratory sector, variable quality among laboratories, and unnecessary utilization of chemistry tests. Higher costs are often the result of high overhead and subsidization of

other hospital departments. To improve production efficiency and reduce overpayment, fewer and larger laboratories should perform the bulk of chemistry tests through consolidation and regionalization. Excess payments by Medicare and Medicaid should be eliminated by establishing fixed-fee schedules. The technical quality of laboratory results as measured by such criteria as accuracy, precision, and reliability over time is generally good for automated chemistry analysis performed in high volume laboratories. The present federal proficiency programs have not measurably affected quality of chemistry services. Studies of the clinical value of chemistry tests have shown little relation between biochemistry screening and patient outcome and there is evidence that substantial reductions in laboratory tests do not result in diminished quality of care. However, at present none of the immediate decision makers has any natural incentive to reduce test ordering. Six general strategies might be employed to improve utilization of laboratory tests: (1) education of physicians; (2) comparison of individual physician test use to group norms; (3) comparison of individual physician practices to objective standards of appropriate test use; (4) rationing of test use; (5) alteration of financial incentives for test use; (6) strengthening of laboratory functioning.

Gordon, Dorothy L.; Howell, Embrey; and Fuller, Norman A. PSRO Effect on Frequency of Laboratory Testing. Washington, DC: National Capital Medical Foundation, 1976.

The study analyzed the potential effect that strict adherence to published norms and standards of care--mandated under PSRO legislation--would have on the frequency of laboratory testing in hospitalized patients. The study abstracted 559 hospital charts for six diagnoses and compared the number and type of laboratory tests ordered with the lists prepared by physician members of the local PSRO. It found that strict adherence to both the usual and optional categories of laboratory testing would produce a 97.8 percent increase in the number of laboratory tests ordered. Furthermore, the study found no consistent utilization pattern within diagnosis--i.e., some of the usual tests were ordered 100 percent of the time--others less than 3 percent. The study raises serious questions regarding the value of specific criteria in peer review.

Grams, R.R. and Lezotte, D.C. "The Laboratory Audit - PSRO for Pathology." Journal of Medical Systems 1, No. 3 (1977):307-14.

A PSRO audit of laboratory performance can be achieved without additional manpower if tied into the communication and laboratory system of the hospital. Techniques are described which provide immediate physician feedback for education. Cumulative statistics are recorded for internal laboratory review and for validation of technical performance. Through proper system designs, significant improvements can be achieved which do decrease health care costs and optimize professional interaction.

Greenland, Philip; Mushlin, Alvin I.; and Griner, Paul F. "Discrepancies Between Knowledge and Use of Diagnostic Studies in Asymptomatic Patients." Journal of Medical Education 54, No. 11 (November 1979): 863-69. NHSQIC #00315.

The value of educational programs designed to promote optimal use of laboratory tests by physicians remains unsolved. To assess the effects of level of training and knowledge of test characteristics in determining laboratory ordering habits, physicians' use of laboratory tests as applied to asymptomatic patients was surveyed, and their knowledge of four specific screening procedures was tested. The survey included 148 physicians both in training and in practice in Rochester, New York. Increased selectivity in the use of tests occurred during residency training, but selectivity correlated poorly with knowledge of test characteristics. These data underline the need for additional studies to determine the role of factors other than knowledge which contribute to the use of laboratory tests. Planners of cost containment programs and educational strategies will need to direct attention to these factors.

Hansing, C.E. "The Risk and Cost of Coronary Angiography. I. Cost of Coronary Angiography in Washington State." Journal of the American Medical Association 242, No. 8 (August 24/31, 1979):731-34.

The National Guidelines for Health Planning require 300 cardiac studies per year in cardiac catheterization laboratories for adequate economic use and safety. To study how these guidelines would affect existing laboratories, data were collected on the cost of coronary angiography and use of all cardiac catheterization laboratories in Washington. The average cost of coronary angiography was $1,363, with the total cost affected by the duration of hospital stay, cardiac laboratory charges, and professional fees. Total angiographic use ranged from 293 to 791 studies per room, but eight laboratories did not perform 300 cardiac studies during 1977. Health planners recommend high use rates based on the theory that there is an inverse correlation between the number of studies and cost. In this study, the regression equation showed no fall in charges with increased number of studies. Therefore, while it may be reasonable from an economic point of view to expect 300 angiographic cases per year in existing laboratories, there is no economic justification for requiring a certain number of cardiac studies per year.

Hardwick, David F.; Vertinsky, Patricia; Barth, Richard T.; Mitchell, Vance F.; Bernstein, Melvin; and Vertinski, Ilon. "Clinical Styles and Motivation: A Study of Laboratory Test Use." Medical Care 13, No. 5 (May 1975):397-407. NHSQIC #50415.

A sample of 50 seasoned clinicians and 30 house staff participated in a study of differences in clinical reasoning styles focusing on laboratory utilization. The great variety of strategies found reflects

differences in experience, background, and training; differences in places of work, available facilities and proximity of experts and technical personnel. For example, house staff in a referral hospital environment with ready access to expert knowledge tend to make significantly different choices of tests to diagnose and manage a myocardial infarction from practicing physicians, whose choices sometimes illustrate their distance from new information. More recently trained physicians rely more heavily on techniques. When asked to limit their use of laboratory tests to those absolutely necessary for the diagnosis, both groups reduced their use of screening measures and tests for secondary diagnoses. Recently trained physicians relied more on a few precise tests which yielded solid diagnostic information, while more experienced physicians depended more on history and physical examination.

Jacobson, Kraig W.; Branch, Leslie B.; and Nelson, Harold S. "Laboratory Tests in Chronic Urticaria." Journal of the American Medical Association 243, No. 16 (April 25, 1980):1644-46. NHSQIC #01236.

One hundred twenty-five patients with chronic urticaria were evaluated with 11 commonly recommended laboratory and radiologic procedures. Abnormal studies were obtained in 26 (20.8 percent) of these patients, but the majority of these abnormalities were evident from the initial history and physical examination. These results indicated that, with the possible exception of sinus roentgenograms, these laboratory studies are not likely to be helpful in the evaluation of chronic urticaria unless there are suggestive findings in the history and physical examination. The yield and equivalent charge of diagnosis for each procedure used was also analyzed.

Lundberg, George D. "The Modern Clinical Laboratory." Journal of the American Medical Association 232, No. 5 (May 5, 1975): 528-29. NHSQIC #50245

Laboratory tests should not be ordered without a plan for using the information gained. This is the first in a series of articles designed to identify a reasonable, defendable approach to the use of the laboratory identification and solution of important common problems. The list of the most common problems, obtained from general practitioners' offices and community hospitals, has been reduced to 45 in which there is heavy involvement of the laboratory. Discussion of each problem will be accompanied by a branching-logic decision tree display with use of the algorithm and a narrative explanation of the problem. The use of "battery" vs. sequential test performance will be considered. This series advocates an integrated, interdisciplinary approach blending clinical observations and judgment with laboratory use. So far, standards have not been developed for laboratory utilization, but they are urgently needed. These basic questions need answers: were the tests appropriate, beneficial, economical, and maximally useful?

Nelson, R.B. "Teaching Technologic Restraint: An Evaluation of a Single Session." Evaluation and the Health Professions 1, No. 3 (October 1978):21-28. NHSQIC #90073.

An excessive number of serum determinations of vitamin B-12 and folic acid was being ordered from the medical service. During 1976 the estimated laboratory costs for detecting five cases of pernicious anemia were about $45,000 or $9,000 per case. It was felt that an educational program stressing the limitations of this use of the laboratory, the cost of the strategies in use, and the proposal of alternate less costly strategies might lead to a reduction in utilization of the laboratory. It has been the feeling that voluntary technologic restraint could not be practiced by physicians and that economic rationing might become necessary to control costs. It was found that physicians could be taught restraint but that constant reinforcement and emphasis would be necessary to make voluntary technologic restraint useful. Monitoring use of the clinical laboratory is a useful technique for assessing the effectiveness of programs aimed at cost containment.

Schroeder, Steven A.; Kenders, Kathryn; Cooper, James K.; and Piemme, Thomas E. "Use of Laboratory Tests and Pharmaceuticals: Variation Among Physicians and Effect of Cost Audit on Subsequent Use." Journal of the American Medical Association 225, No. 8 (August 20, 1973): 969-73.

This study of the patterns of physician utilization of laboratory tests and prescription behavior revealed that great variation existed among physicians in costs of laboratory and drug use, a 17-fold variation in laboratory costs and a four-fold variation in drug costs. Physician knowledge of the results of the cost audit resulted in a 29.2 percent decrease in laboratory costs (P less than .01) and a 6.4 percent increase in drug expenditures (P less than .01). The physicians studied were 33 faculty internists. Ten to 15 patients per physician were chosen at random from among those patients meeting certain eligibility requirements, e.g., to have from two to eight of the medical problems on a "Master Problem List." No effort was made to study comparable groups, in terms of demographic and clinical characteristics, of the patients. All laboratory and drug costs for each patient during a three-month period in 1971 were totaled and calculated on an annual basis. Mean annual laboratory and drug cost for each physician's patients were calculated. Each physician was informed of his ranking (in terms of his patients' laboratory and drug expenditures) relative to other physicians. The study was repeated for a second three-month period in order to assess how physician behavior in ordering laboratory tests and prescribing drugs changed as a result of the cost audit. Several physician variables, e.g., physician age, and internal medicine board certification, were analyzed; there was no significant correlation between any of the physician variables and costs of care. The relative cost behavior of the physicians was generally consistent during the six-month period. The study did not attempt to measure quality of health care nor attempt to obtain information relating cost to either quality or efficiency of medical care.

Schroeder, Steven A. and O'Leary, Dennis S. "Differences in Laboratory Use and Length of Stay between University and Community Hospital." Journal of Medical Education 52, No. 7 (May 1977):418-20. NHSQIC #80899.

The length of hospital stay and use of diagnostic services among internists' patients were compared for patients admitted to a university hospital and those admitted to a nearby community hospital. A group of 13 internists admitting patients to both types of hospitals was drawn from lists of all physicians discharging at least five patients from each hospital in 1973. Length of stay was shorter at the university hospital. Differences in per diem charges between the university and community hospital were relatively small, accounting for less than 50 percent of the overall difference in patient charges. The greatest disparity occurred in the frequency of diagnostic testing, where the university hospital patients incurred a 56 percent increase in charges over the community hospital patients. Medical consultations and invasive procedures, which were not included, would have increased this disparity. Patients in the ICU and CCU were excluded from the study. An analysis of length of hospital stay and number of diagnoses per patient did not reveal differences in the severity of illness. Since university hospitals usually encourage the use of laboratory tests for teaching purposes, they tend to overlook the costs; but concern about rising costs of medical care may force those responsible for clinical teaching programs to consider issues of cost-effectiveness.

Skendzel, Laurence P. "How Physicians Use Laboratory Tests." Journal of the American Medical Association 239, No. 11 (March 13, 1978): 1077-80. NHSQIC #80344.

The aim of this study was to measure the ways in which a physician perceives and reacts to a laboratory test result. After reviewing a series of brief clinical problems, physicians were asked to indicate the change in test results that would alter the diagnosis or treatment. Although there were wide differences in attitudes, the pattern of responses from 125 internists offered estimates of what is a clinically important change. In selected clinical settings the change in successive measurements chosen with the greatest frequency as indicators of a clinically important change in level were glucose, 35 mg/dl; BUN, 6 mg/dl; serum sodium, 4 to 6 mEq/liter; serum potassium, 4 to 6 mEq/liter; uric acid, 8 mg/dl; creatinine, 0.4 mg/dl; serum calcium, 4 to 5 mg/dl; triglycerides, 20 mg/dl; hemoglobin, 1 g/dl; and serum osmolality, 11 mOsm/kg. The responses were compared with estimates of laboratory precision drawn from a national quality control program. The quality of laboratory testing was rated as satisfactory for clinical use in four of five clinical settings. The study points out the need to correlate the activities in the clinical laboratory with the application of test results in the care of patients.

Speicher, Carl E. and Smith, Jack W. "Interpretive Reporting in Clinical Pathology." Journal of the American Medical Association 243, No. 15 (April 18, 1980):1556-60. NHSQIC #01238.

Attempts have been made by the laboratory to assist clinicians in gleaning the information they require from clinical laboratory tests and in integrating it into the diagnostic process. This effort to reduce laboratory data to clinically useful information, known as interpretive reporting, constitutes a serious effort to improve the use of laboratory data for patient care. Results of a survey conducted by the Department of Pathology at the Ohio State University to determine the current status of interpretive reporting practices showed that many pathologists use interpretive reports. It is suggested that clinicians in community hospitals tend to welcome these reports, while subspecialists in university centers tend to view these reports as unnecessary because they wish to interpret their own data. Documentation in the patient's chart of diagnostic possibilities and therapeutic suggestions by the pathologist has raised questions of medicolegal liability, especially in cases where appropriate action was not taken. Careful wording, therefore, has evolved to include terms which do not bind the clinician to a certain course of action. Interpretive reports should benefit patient care by closing the gap between the mere reporting of laboratory test results and their integration into the diagnostic process. Interpretive reporting is meant to highlight the fact that there are many ways in which the information content and clinical usefulness of laboratory data can be improved.

Wheeler, L.A.; Brecher, G; and Sheiner, L.B. "Clinical Laboratory Use in the Evaluation of Anemia." Journal of the American Medical Association 238, No. 25 (December 19, 1977):2709-14.

Follow-up tests ordered on 258 consecutively examined inpatients with low hemoglobin values on admission were analyzed. The appropriateness of the follow-up tests was evaluated by chart review after preselection by an algorithm. When the cause of the anemia was known or was irrelevant in view of the patient's clinical status, the laboratory use was judged to be adequate. Seventy-one percent of patients studied had an adequate follow-up, though 11 percent had nonindicated tests performed, scored as laboratory overuse. Twenty-four percent had no follow-up, scored as laboratory underuse. Five percent did not have all indicated tests done and had nonindicated tests done, scored as a mixture of underuse and overuse. Potential remedies to correct misuse are discussed.

BLOOD TRANSFUSION SERVICES

Benziger, M.; Benziger, J.; and Canfield, T.M. "Blood Banking in the Small Hospital." Surgical Clinics of North America 59, No. 3 (June 1979):471-82.

This represents an attempt to briefly outline the type of blood bank and transfusion service we at Montrose Memorial Hospital have developed and utilized to supply our blood needs. Basically it is a system based on a fairly large list of known, pretested, and available donors who can be contacted quickly to supply blood upon demand. Only bare minimum stock supplies are maintained. The major problem is waste of blood, but Montrose experience continues to fall below the average for rural areas. Although the starting and maintaining of this walking blood bank was and is a complicated and somewhat tedious process, we have been happy with the results and have been able to supply in an adequate fashion the blood requirements of an isolated yet extremely active population with a sophisticated medical community.

Lang, Gordon E. and Drozda, Edward A. "Survey of Blood Ordering Practices for 12 Elective Surgical Procedures." Wisconsin Medical Journal 78, No. 1 (January 1979):27-31. NHSQIC #01244.

The blood ordering practice for 12 elective surgical procedures performed at 13 Milwaukee hospitals was surveyed. There were 10,448 units of blood crossmatched for 4,823 operations. There were 3,216 units transfused for a crossmatch transfusion ratio of 3.25. The data support the opinion of others that an excessive amount of blood is being crossmatched for elective surgery. Physicians should establish preoperative crossmatch guidelines and should consider the use of the type and screen in lieu of a crossmatch for those operations in which the possibility of significant blood loss is remote. This will result in a considerable monetary saving, a decrease in the incidence of blood outdating and an improvement in blood availability, all without jeopardizing the patient.

Lipp, Carolyn S. "Tips for Reviewing Blood Usage." Hospital Peer Review 4, No. 9 (September 1979):119-21. NHSQIC #00606. Ladon, Barbara. "Tips for Reviewing Blood Usage." Hospital Peer Review 4, No. 9 (September 1979):121-22. NHSQIC #00606.

Blood utilization review is necessary in monitoring the quality of care for hospital use as well as for the JCAH and the PSRO. The first step in implementing blood utilization review is to establish a committee to monitor the use of blood and any ensuing complications from a transfusion. Blood utilization review may be the responsibility of several departments. In small hospitals, blood utilization

review may be combined with other medical audit functions. Methods of review may vary from analyzing a display of data to a retrospective chart review of every patient receiving a transfusion. The two important areas to consider when establishing a blood utilization review system are cost and quality. Hospitals should review the number of units of blood typed and crossmatched versus the number actually given. Since blood transfusions may be risky, it is important to study the justification for giving blood as well as the complications that ensue. Sample criteria for such justification and complications are provided. Transfusion review can also be incorporated into any audit, especially a surgical audit. Several new approaches to blood utilization review have recently been tried successfully. One PSRO supported an areawide study of blood utilization; results gave the hospitals reliable documentation of their differing performance. The hospitals are now requesting another audit to determine how patterns of use have changed. Concurrent review can then become an effective monitor after audit has identified problems.

Quality Review Bulletin 3, No. 12 (December 1977). NHSQIC #80132.

This month's Quality Review Bulletin includes a special section on blood utilization. The first article, "To Each His Own," examines the experiences of the Mayo Clinic, where a system was implemented to facilitate the use of autologous transfusion in elective surgery. This technique increases the supply available for emergencies or for patients with massive hemotherapy requirements, and decreases the demand for homologous blood. The second article discusses a review of blood utilization in elective surgery at the State University of New York Upstate Medical Center. Guidelines were established after research showed that the number of units crossmatched was more than double the number used. Result: savings in blood units, staff time, and money. The standard procedures for blood bank personnel are included with this article. "In Another Vein" presents criteria for retrospective audits of blood transfusion as a tool to monitor utilization of whole blood or components. Included is a study design for audits with suggestions for expanding the studies to include related topics. The last article discusses the minimal standards of the American Association of Blood Banks regarding the issuing and administration of blood for transfusions.

Turban, Efraim and Parker, Alan J. "Evaluation and Conflict in Measures of Performance for Blood Banking." Medical Care 17, No. 2 (February 1979):168-74. NHSQIC #01240.

The policy statements regarding national blood banking goals as established by the American Blood Commission do not identify precise measures of performance. A survey was conducted to identify the most important measures of performance used in blood banking. Three groups--physicians, blood bank administrators and nurses--were used.

Results indicate that about 20 measures are currently being used in the industry. With respect to the relative importance of the measures of performance, there is strong agreement between physicians and nurses but little agreement between nurses/physicians and administrators. The survey also established that the value of out-dating various types of blood is negatively correlated with the relative frequency distribution of blood in the general population.

RADIOLOGY

Abrams, Herbert L. "Overutilization of X-Rays." New England Journal of Medicine 300, No. 21 (May 24, 1979):123-16. NHSQIC #90727.

Excessive radiation per film, excessive films per examination, and excessive examinations per patient constitute ways in which x-rays are overutilized. The single most important factor contributing to overuse may be the poorly trained technologist who is unaware of the hazards of radiant energy or who produces inadequate films, necessitating repeated exposure. Many diverse factors contribute to excessive examinations per patient: for example, physicians' lack of knowledge of what radiology can actually do, institutional requirements and mass screening, and physicians' practice of defensive medicine. Since radiology is a referral-dependent discipline, x-ray examinations are usually initiated by non-radiologists; the number of examinations performed, therefore, is independent of the radiologist, who rarely questions a colleague's judgment. However, 75 percent of all non-hospital radiological studies are performed by non-radiologists, untrained in the physics and biology of radiation, on equipment purchased themselves, providing an economic incentive for increased utilization. Even though the federal and state governments are concerned about radiation safety, there has been little demand for quality control to insure that radiology is practiced only by properly trained personnel. Moreover, the development and implementation of new x-ray technology far exceeds studies to clarify their appropriate application.

Cantwell, K.G.; Press, H.C., Jr.; and Anderson, J.E. "Bedside Radiographic Examinations: Indications and Contraindications." Radiology 129, No. 2 (November 1978):383-84.

Indications for requesting and performing bedside radiographic examinations in an institutional setting are proposed. A prospective study of such examinations was made in a 500-bed hospital. All nursing units were evaluated for criteria used in requesting bedside examinations. It was found that general medical and surgical wards generate the greatest percentage of bedside studies, and yet their criteria for requesting such studies yielded the lowest percentage of validity. General criteria for utilization of mobile radiographic equipment could lead to better radiographs and improved allocation of equipment and personnel.

Childs, Alfred W. and Hunter, Diane. "Non-Medical Factors Influencing Use of Diagnostic X-Ray Physicians." Medical Care 10, No. 4 (July-August 1972):323-35. SQIC #90434.

The patterns of use of x-ray y physicians caring for aged persons under a medical assistance p gram were analyzed to determine the effect of physician characte tics on these patterns. Non-radiologists providing direct x-ra ervices to patients used diagnostic x-ray more frequently than d physicians referring patients to radiologists for examination, d the specialty of the physician and the number of years since h graduation from medical school were associated with significant v ation in use of x-ray and choice of procedure for examination o he chest. Younger physicians used x-ray more than older ones ar specialists more than general practitioners. Non-radiologists pr ding direct x-ray services used less complex examination procedur and, for examination of the chest, they frequently used fluoros y as an independent procedure. The data support the conclusion at non-radiologists having economic interest in radiologic equipme make heavier use of diagnostic x-ray than do other physicians, hough their choices of examination methods suggest that their kn ledge of radiology is less than that of radiologists. Patterns o se of x-ray by internists suggest a strong influence of specialty aining on practice and persistence of this influence for many year Finally, findings support national survey evidence that patient f non-radiologists providing direct x-ray services experience re ively larger exposure to radiation than do patients of other phy ians.

"Clinical Audit in Diagnostic iology." British Medical Journal No. 6085 (August 20, 1977):479-80 VHSQIC #90284

The increasing performance diagnostic x-ray examination as a routine procedure instead of the result of a clinical decision has created the need for a meth of clinical audit to determine how these examinations have inf nced subsequent patient management. Such an audit may contain a any as three phases: (1) identification of procedures which are nsafe, overused, or of doubtful value; (2) observational audit to e ablish consistency of use and relative usefulness of a procedure, nd to identify those categories of patients most likely to be it from a particular procedure; (3) experimental audit in which dification of the controlled clinical treatment will yield further formation about the relative merits of a procedure. Ideally all w procedures, including computerized axial tomography and ultrasc , should be audited before being made generally available. The au process must remain in the hands of the physicians themselves.

"Computed Tomography: The Views of Blue Shield of California." Western Journal of Medicine 127, No. 4 (October 1977):357-61. NHSQIC #80048.

This paper presents the findings of the Medical Policy Committee of the Blue Shield of California concerning the utilization of and reimbursement for computed tomography (CT). The Committee concluded that CT is a proven radiologic modality which provides valuable clinical information in the early detection, differentiation, and demarcation of diseases of the head and body. Recognizing that CT scanning has both a positive and negative impact on the cost of health care, physicians must reevaluate the relationship of advancing technical ability in regard to the final outcome of the disease in question. Every physician should apply medical and moral judgment to his decisions with respect to each patient.

E.M.I. Medical, Inc. CT in Perspective: Diagnostic Efficiency and Health Care Implementation. Northbrook, Illinois: E.M.I. Medical Inc., 1977.

This study, the result of six months of clinical and statistical research, verifies the diagnostic efficacy of computerized tomography (CT) and indicates that the use of these services can reduce acute health care costs. Section I proposes a new definition of diagnostic efficacy and provides a new model for testing the diagnostic efficacy of CT. Section II analyzes the incidence/prevalence of disease and CT use patterns in nine general community hospitals and clinics in the United States.

Gempel, Patricia A.; Harris, George H.; and Evens, Ronald G. Comparative Cost Analysis--Computed Tomography vs. Alternative Diagnostic Procedures, 1977-1980. HRP-0900101/7ST. Springfield, Virginia: National Technical Information Service, December 1977.

In comparing the total national cost of utilizing computed tomography (CT) for medically indicated diagnoses with that of conventional x-ray, ultrasonography, nuclear medicine, and exploratory surgery, this investigation concludes that there was little, if any, added net cost from CT use in 1977 or will there be in 1980. CT, generally recognized as a reliable and useful diagnostic modality, has the potential to reduce net costs provided that an optimal number of units can be made available to physicians and patients to achieve projected reductions in alternative procedures. This study examines the actual cost impact of CT on both cranial and body diagnostic procedures. For abdominal and mediastinal disorders, CT scanning is just beginning to emerge as a diagnostic modality. As such, clinical experience is somewhat limited and the authors assume that no significant reduction in conventional procedures took place in 1977. It is estimated that the approximately 375,000 CT body procedures performed

in 1977 represent only a 5 percent cost increase over use of other diagnostic modalities. It is projected that 2,400,000 CT body procedures will be performed in 1980 and, depending on assumptions used, total body diagnostic costs will increase only slightly or be reduced. Thirty-one tables appear throughout the text presenting cost data broken down by types of diagnostic procedures used and projections by years. Appendixes present technical cost components for diagnostic procedures, the comparative efficacy of CT as revealed in abstracts of published literature, selected medical diagnoses, and references.

Hall, Ferris M. "Overutilization of Radiological Exams." Radiology 120 (August 1976):443-448. NHSQIC #90438.

Overutilization of radiological studies has become a significant economic consideration in this country. The reasons for unnecessary examinations include indirect financial benefit to physicians, medicolegal considerations, inadequate history provided to the radiologist, and inappropriate requests. In many radiological examinations, the indications are controversial or unknown. Recent Professional Standards Review Organization legislation will probably diminish overutilization of radiological studies, both directly through peer review and indirectly by providing comparison statistical data to facilitate better assessment of the value of individual examinations. The final common pathway of the radiological examination is the radiologist, who has the right and the duty to refuse studies, particularly when they involve risk to the patient.

Institute of Medicine. Computed Tomographic Scanning: A Policy Statement. Washington, DC: Institute of Medicine, 1977.

The swift and widespread adoption of computer tomographic scanning has attracted questions by planners, insurers and investigators of health services concerned with the efficacy and expense of this new technology. The data are currently inadequate to project the long term cost-effectiveness of CT scanning, but the trend among new technologies has been toward overuse. Given the cost of this technology, the Institute of Medicine convened a committee to develop a policy statement examining the issues of efficacy, cost/reimbursement, desired placement, and policy implementation. The presented recommendations are based on the incomplete evidence of efficacy which has developed from clinical experience. It is nonetheless recommended that clinical trials meeting high standards of experimental design and statistical significance be conducted for this technology, or for any new technology, before the widespread introduction of that technology into the medical marketplace.

Kalivoda, Frank J. "Ancillary Audits in the Radiology Services: Improving Patient Care." Radiology Management 2, No. 1 (Fall 1979): 2-10. NHSQIC #01293.

The creation, implementation, and results of an ancillary service audit program in a radiology department are described. Departmental audits provide an ongoing method of monitoring services to ensure that x-ray examinations are as accurate as possible and that diagnoses reflect this accuracy. The development of an ancillary audit should emphasize the development and refinement of criteria. After conducting the audit, it is essential that results be presented to and reviewed with the administrative head of the area. The audit results will also be evaluated by the Medical Care Evaluation Committee as to their relativity to the overall Patient Care Audit Program. The final phase of the audit process is the reaudit procedure; if results do not deviate from the specified standard, the audit has produced the desired results. Audits also can be used in establishing ongoing standards of care. For example, results of an audit on the preparation of patients for gastrointestinal series examination found that poor preparation procedures created many problems which resulted in increased length of stay. A six-month formal audit resulted in a steady increase in proper patient preparation. Process audits can also be valuable aids in the justification of additional staff and major equipment acquisitions.

Knaus, William A.; Schroeder, Steven A.; and Davis, David O. "Impact of New Technology: The CT Scanner." Medical Care 15, No. 7 (July 1977):533-42. NHSQIC #70658.

Three years after the introduction of computerized tomography (CT) at George Washington University Medical Center, data demonstrated: (1) no change in the frequency of electroencephalography (EEG); (2) a 14.5 percent decrease in conventional radionuclide brain scanning (BS); (3) a decline of 15.6 percent in the frequency of cerebral arteriograms; and (4) an 80 percent decrease in the use of pneumonoencephalography. Demand for CT scanning exceeded that of all other diagnostic procedures combined, and hospital charges for neuroradiological tests increased from $321,410 to $1,314,204 with 93 percent of the increase attributable to CT. A comparison of 322 patients admitted for cerebrovascular disease or brain tumor before and after introduction of CT revealed that CT significantly reduced the frequency of arteriography with the cerebrovascular diagnosis while also decreasing reliance on EEGs and BS for patients with brain tumors. Within one diagnostic category, for cerebral hemorrhage, the in-patient case analysis suggested that CT improved patient management by reducing the need for surgery and in-patient care. Overall, the combination of the in-patient records and aggregate institutional data suggests that, with the exception of certain data, CT is used in two distinct patterns as a substitute for invasive procedures and as an additional non-invasive screening test.

Larson, Eric B.; Omenn, Gilbert S.; and Lewis, Howard. "Diagnostic Evaluation of Headache: Impact of Computerized Tomography and Cost-Effectiveness." Journal of the American Medical Association 243, No. 4 (January 25, 1980):359-62. NHSQIC #00844.

One hundred sixty-one highly selected patients with headache were studied to assess the impact of computerized tomography (CT) on diagnostic evaluation and to determine cost-effectiveness of neurodiagnostic evaluation of headache. Fewer nuclide brain scans were performed after availability of CT, but diagnostic charges stayed about the same. A careful history and physical and neurological examinations were adequate screens to detect intracranial mass lesions or systemic disease associated with headache. In patients with normal findings from neurological examination, no clinically important abnormalities were detected by CT, skull roentgenogram, angiography, or nuclide brain scan. The cost of finding a case of brain tumor was estimated to be at least $1,265 for patients with abnormalities on neurological examination and $11,901 for patients with normal findings on neurological examination. Neurodiagnostic evaluation of headache patients with normal finds from neurological examination is expensive and was clinically unrewarding in this series.

Larson, Eric B.; Omenn, Gilbert S.; and Loop, J.W. "Computed Tomography in Patients with Cerebrovascular Disease: Impact of a New Technology on Patient Care." American Journal of Radiology 131, No. 1 (July 1978):35-40.

The medical care of 157 patients with suspected cerebrovascular disease was analyzed to assess the impact of the new technology, computed tomography (CT) of the brain, on the care of these patients. A cohort of patients admitted before installation of CT was compared to two cohorts admitted after installation of CT. Length of hospital stay, speed of diagnostic work-up, treatment, and discharge plans were not significantly different. Discharge diagnoses were more specific after installation of CT. Lumbar punctures and radionuclide brain scans were used less frequently, but utilization of other diagnostic studies was unchanged. Aggregate charges for diagnostic procedures actually increased in both after-CT groups. In this study, addition of CT to the neurodiagnostic armamentarium resulted in little demonstrable improvement in the care of these patients with cerebrovascular disease but did increase the cost of evaluation. This is unlike the situation for patients with brain tumors, where CT was shown to improve care while not increasing cost. These results may help guide the use of CT by physicians caring for patients with cerebrovascular disease and suggest that health planners not use all patients with cerebrovascular disease in estimating need for CT.

Potsaid, Majic S.; Rhea, James T.; Llewellyn, Henry J.; Pfister, Richard C.; Newhouse, Jeffrey H.; and Yoder, Isabel C. "Quality Assessment and Assurance In Diagnostic Imaging." Radiology 127, No. 3 (June 1978):583-88. NHSQIC #90172.

This article presents the approach to quality assurance taken by one radiology department in a leading hospital. The QA committee chose excretory urography as the subject of an audit. The audit was designed to be simple so that interruption of routine work was minimal. Line forms were developed, to be completed by the scheduling personnel, radiologist, referring physician, patient, and technologist. One hundred consecutive patients undergoing excretory urography (50 inpatients and 50 outpatients) constituted the audit sample. The forms were stapled to the patient's radiology requisition, and when completed were removed and returned to the committee. The criteria used to evaluate the data are expressed as a series of yes/no questions. Some criteria, which were arbitrarily set based on what seemed appropriate and reasonable, can be standardized when sufficient process data have been collected; other criteria were determined by federal and state regulations. Because diagnostic imaging is a service-oriented specialty whose consumers include both the patient and the referring physician, the committee wanted to learn how both parties viewed the service they were receiving. Most patients' and physicians' comments were favorable. Two deficiencies were indicated by the audit: failure to check equipment for radiation output within the 12-month period required by regulation, and inordinate delay in the referring physician's receiving his copy of the report. All equipment is now routinely checked, and the reporting system is to be computerized to eliminate delays in mail handling.

Ragan, D.P. and Perez, C.A. "Efficacy of CT-Assisted Two Dimensional Treatment Planning: Analysis of 45 Patients." American Journal of Radiology 131, No. 1 (July 1978):75-79.

A method is presented for quantitatively assessing the impact of CT assistance in treatment planning for radiation therapy. A three-phased analysis of treatment plans for 45 patients was undertaken. Nonuniformity and local efficiency of dose delivered were compared without and with the utilization of CT information. Good agreement between the objective assessment of treatment plans and independent subjective optimization of the plans by a radiotherapist supports the validity of this technique. On the basis of nonuniformity of dose, 31 of the 45 cases were planned more poorly in the absence of CT information. The addition of CT information permitted optimization by the physician in 25 of the 45 patients. Twenty-three of these showed improved local efficiency (92 percent). This study indicates that measurable improvements in treatment plans are available by taking advantage of CT information. These were greatest in the brain, lung, and retroperitoneum in this small group of patients.

Rigler, Leo G. "Is This Radiograph Really Necessary?" Radiology 120, No. 2 (August 1976):449-50. NHSQIC #90444.

While agreeing that overutilization of radiological diagnosis creates an unnecessary increase in both medical costs and patient exposure, the author calls for a more sensible and economical approach to the number of radiographs taken as part of any given study, noting that in many cases the number could be cut in half without any loss of diagnostic efficiency. By limiting the number of views per study, the radiologist would be able to remain in a safe medicolegal situation without reducing his ability to function as a diagnostician.

Rosenbaum, H.D.; Hildner, Jack; and Hiser, Wesley. "Over-Utilization of Diagnostic Radiology by the Department of Medicine of the University of Kentucky Medical Center During August 1972." Journal of the Kentucky Medical Association 71, No. 4 (April 1973):233-36. NHSQIC #90285.

To test an impression that significant over-utilization was occurring, a one-month audit was conducted of x-ray examinations of inpatients at the University of Kentucky Medical Center. Of 619 examinations, 72, or 11.8 percent, were judged unnecessary. Twenty-seven medically unjustified x-rays included a number of cases without significant diagnostic or therapeutic possibilities, and a group of examinations performed subsequent to thoracentesis. Administrative errors accounted for the bulk of the remainder, including repetitions of examinations performed elsewhere, examinations repeated too soon, and x-rays of the wrong patient. Five errors were attributed to improper decisions within the radiology department. By exercising appropriate clinical judgment, physicians can significantly reduce the number of x-rays ordered and at the same time improve the quality of care. A study conducted at the University of Colorado identified a series of causes of unnecessary x-rays, and by continuous reminders to house staff achieved a short-term reduction of 20 to 30 percent in radiologic workload. More research is needed, and the American College of Radiology is gathering data on the problem.

Sagel, Stuart S.; Evens, Ronald G.; Forrest, John V.; and Bramson, Robert T. "Efficacy of Routine Screening and Lateral Chest Radiographs in a Hospital-Based Population." New England Journal of Medicine 291, No. 19 (November 7, 1974):1001-04.

A prospective study of chest roentgenographic examinations was conducted to determine if the elimination of some examinations of films often routinely obtained might be medically and economically justifiable. Analysis of data from over 10,000 examinations suggests that routine screening chest radiographs, obtained solely because of hospital admission or scheduled surgery, are not warranted in patients

under 20; the lateral projection, which can be eliminated from routine screening examinations in patients 20 to 39 years of age, should be part of the chest roentgenographic examination whenever chest disease or a reasonable possibility of chest disease is suspected, and in screening examinations of patients 40 years of age or older.

Stanley, R.J.; Sagel, Stuart S.; and Levitt, R.G. "Computed Tomographic Evaluation of the Pancreas." Radiology 124, No. 3 (September 1977):715-22.

Computed tomography (CT) was used to assess possible pancreatic disease in 352 patients. It was found to be a reliable, often specific, and noninvasive method for detecting pancreatic neoplasms and pseudocysts. The use of CT has resulted in the diminished use of pancreatic angiography. Effects of CT on patterns of utilization of other diagnostic methods are described.

U.S. Congress, Office of Technology Assessment. Policy Implications of the Computed Tomography (CT) Scanner. Washington, D.C., August 1978.

This study of CT scanners highlights a number of policy problems in medical care that relate to new and old, expensive and inexpensive technologies alike. The availability of a wide variety of diagnostic tests and the strong incentives to use them have increased their utilization, resulting in increased medical care costs. As is typical for medical technologies, well designed, prospective studies of the efficacy of CT scanners were not conducted before the diffusion of this expensive technology. Planning agencies, PSROs, and third-party payers have inadequate information for determining the need for additional machines, appropriate standards of use, and appropriate services for reimbursement. No PSRO standards are known to have been developed for CT scanning.* Reimbursement mechanisms exert little pressure to perform services such as CT scans efficiently; indeed, present methods promote the additional use of technologies, even if the results are duplicative. CT scanning appears to be a relatively safe technology although it does expose patients to significant doses of ionizing radiation and an additional small risk if contrast material is injected. As of May 1977, 401 CT scanners were known to be in use in the United States. All states have at least one scanner installed or approved. Areas of governmental policy alternatives that affect the use of technologies such as CT scanning consider the development of information on efficacy and safety, changes in regulatory policies, and alternative financing methods.

*Under a contract between HSQB and the American Association of Professional Standards Review Organizations (AAPSRO), an Ad Hoc Computerized Axial Tomography Criteria Committee developed criteria and standards for both head and whole-body scans. These were approved by the National PSR Council in November 1978.

U.S. Food and Drug Administration, Bureau of Radiological Health. National Conference on Referral Criteria for X-Ray Examinations. Rockville, Maryland, April 1979.

This report contains the proceedings of the national conference which convened to discuss x-ray referral criteria and other issues relating to the problem of unnecessary x-ray examinations. Proposed as a partial solution to the problem, referral criteria offer the potential to significantly reduce overutilization of x-ray procedures. Representatives of health-related government agencies, state health departments, various medical societies, third-party carriers, and the legal profession met to conduct in-depth discussions and provide recommendations for future actions. The report includes a series of papers on the causes of low yield examinations, the phenomenon of "defensive radiology," and the influence of patient attitudes on x-ray referrals. Also included is a discussion of the roles of the physician, patient, radiologist, hospital, legal system, and third-party carriers in the radiological process. The role of the government reimbursement system is also reviewed, noting the PSROs' responsibility for making medical necessity determinations based on locally developed criteria. PSRO development of referral criteria is described as a valuable educational tool for physicians. This volume further contains a panel discussion on physicians' referral patterns; reports on workshops held concerning x-ray referral criteria, defensive radiology, patient/consumer problems and administrative x-ray procedures; and other issues.

U.S. Food and Drug Administration, Bureau of Radiological Health. Study of the Effect of High Yield Criteria for Emergency Room Skull Radiography. Rockville, Maryland, 1978.

The University of Washington Hospital has established a list of high yield criteria for emergency room skull radiography. Physicians check the appropriate reason for ordering skull films from a list of criteria appended to each radiographic request. A comparison was made of emergency room skull films between University Hospital and Harborview Medical Center, a facility that does not use a criteria list. Reviewers found a significant reduction in utilization and a concurrent increase in significant positive results at University Hospital. Moreover, first-year surgical residents who had four-week rotations at both hospitals displayed a lower rate of use at Harborview if they first practiced at University. Even compliance as poor as 50 to 60 percent to the criteria list led to a reduction of x-ray utilization; closer monitoring should reduce rates even more. The elements of the criteria list are constantly being evaluated and altered as various criteria are proved to produce low yields of abnormal findings. Efforts of this type may produce substantial health care cost savings and reduce the exposure of the general population to radiation.

Winston, K.R. "Neurodiagnostic Tests in Children with Brain Tumors: Changing Patterns of Use and Impact on Cost." Pediatrics 61, No. 6 (June 1978):847-52.

The utilization of neurodiagnostic tests in the initial work-up in children with brain tumors was relatively stable during the three years before computed tomography (CT) became available. After this test became available there was a significant (P less than .05) reduction in the utilization of cerebral angiography, echoencephalography, electroencephalography, and ventriculography in children with tumors below the tentorium. In children with tumors above the tentorium, only a reduction in the use of cerebral angiography and radioisotopic scanning was demonstrated. These changes have resulted in a significant (P less than .05) reduction in cost to the patient (or third party) for the initial neurodiagnostic work-up. Since CT became available, children with brain tumors undergo fewer tests, and the greatest reduction has been in tests that have the greatest cost.

RADIATION THERAPY AND NUCLEAR MEDICINE

Henry, David A.; Gray, Jane M.B.; Cuthbert, Georgina; Greig, William; and Lawson, David H. "Frequency and Pattern of Radionuclide Administration to Patients in a General Hospital." European Journal of Nuclear Medicine 2, No. 3 (September 30, 1977):133-35. NHSQIC #90449.

As part of a drug surveillance program details of nuclide administration were recorded for 5,288 consecutive patients admitted to the medical wards of a large general hospital. Overall use of nuclides among this group was found to be low, and multiple exposure during one hospital admission was rare. Exposure to radiation as a result of nuclide administration is not a major hazard when compared to the diagnostic information provided.

Kelly, Richard J.; Cowan, Robert J.; Ferree, Carolyn B.; Raben, Milton; and Maynard, C. Douglas "Efficacy of Radionuclide Scanning in Patients with Lung Cancer." Journal of the American Medical Association 242, No. 26 (December 28, 1979):2855-57. NHSQIC #00869.

Ninety-two patients with histologically proved carcinoma of the lung were studied retrospectively to determine the usefulness of liver, brain, and bone imaging in their examination and treatment. Occult metastatic liver disease was observed in two (5.3 percent) of 38 asymptomatic patients, while four (6.6 percent) of 58 neurologically intact patients had abnormal brain scans. Eight (13.6 percent) of 59 asymptomatic patients had metastatic bone disease. Seven (18.4 percent) of 38 patients with no clinical evidence of metastatic disease to liver, brain, or bone had at least one type of abnormal radionuclide study. More than half (52.5 percent) of the patients studied had at least one abnormal scan exclusive of symptoms. Radionuclide imaging is a useful procedure in the initial evaluation and subsequent management of lung cancer.

Winston, K.R. "Neurodiagnostic Tests in Children with Brain Tumors: Changing Patterns of Use and Impact on Cost." Pediatrics 61, No. 6 (June 1978):847-52.

The utilization of neurodiagnostic tests in the initial work-up in children with brain tumors was relatively stable during the three years before computed tomography (CT) became available. After this test became available there was a significant (P less than .05) reduction in the utilization of cerebral angiography, echoencephalography, electroencephalography, and ventriculography in children with tumors below the tentorium. In children with tumors above the tentorium, only a reduction in the use of cerebral angiography and radioisotopic scanning was demonstrated. These changes have resulted in a significant (P less than .05) reduction in cost to the patient (or third party) for the initial neurodiagnostic work-up. Since CT became available, children with brain tumors undergo fewer tests, and the greatest reduction has been in tests that have the greatest cost.

PHARMACEUTICAL SERVICES

American Public Health Association. "Quality of Care in the New Mexico Medicaid Program (1971-1975)." Medical Care 18, No. 1, Supplement (January 1980):1-129.

This study examines the impact of the New Mexico Experimental Medical Care Review Organization (EMCRO) on the use of antibiotics for common infectious diseases. Describing the patterns of care delivered by physicians participating in this Medicaid program, this report highlights certain changes in patient therapy and management effected by the review program during its four-year operation, 1971-1975. Quality of care was assessed with respect to the way entire episodes of respiratory illnesses were managed: injectable and oral antibiotics, laboratory tests, and physician visits. The study covered four areas of investigation: (1) overall changes in use of injections by pharmacologic type of drug; (2) differences in injection use by type of physician; (3) differences in injection use by physician types for selected ambulatory conditions; and (4) differences in quality of care for entire episodes of illness by physician type. Findings indicate that the New Mexico EMCRO review program eliminated inappropriate injections by developing rational guidelines which were successfully enforced. It also changed the selection of secondary antibiotic injections to more appropriate choices. These improvements effected a reduction in the variance of the quality of care without adversely affecting the general level of care. These beneficial effects confirm that areawide peer review organizations can assist in correcting quality of care problems and in maintaining higher levels of care.

American Society of Hospital Pharmacists, Model Quality Assurance Program for Hospital Pharmacies. Revised edition. Washington, DC: American Society of Hospital Pharmacists, 1980. NHSQIC #01655.

This workbook is intended to furnish hospital pharmacists with all the information needed to develop and conduct formalized quality assurance programs for their services. Quality assurance is seen as a continuous cyclical process consisting of the defining of criteria and standards for acceptable service, the evaluation of whether services and products meet those standards of acceptability, the elimination of any uncovered eficiencies through educational or other correctional activities, and the periodic reassessment of performance and standards. Effective quality assurance requires that a minimum acceptable level of quality be determined before assessment takes place. A self-evaluation instrument, consisting of structural criteria relating to pharmacy procedures, programs, and resources, is recommended as preparation for quality assurance activities. A model Quality Assurance Program for Hospital Pharmacies (QAP-HP), consisting of a Pharmacy Audit Form, an Audit Summary Form, and a Record of Actions Taken Form, is presented to assist the pharmacy manager in implementing a system. Additional materials for implementing the QAP-HP, including sample criteria and several copies of each form, are provided. The appendix includes reprints from the published literature on quality assurance and standards, as well as a selected bibliography.

Blom, Bernhard E. and Moore, Mary C. Psychotropic Drug Therapies. Chicago, Illinois: InterQual, Inc., 1978.

This is the first issue in an InterQual Mental Health Audit Criteria Series. Each criteria set contains six modules: three "justification" modules measuring pretreatment care phases (diagnosis, admission, and treatment selection), and three "outcome modules" measuring events during and after treatment (treatment, complications, and discharge status). The sample criteria sets cover lithium therapy, tricyclic antidepressant drug therapy, monoamine oxidase inhibitor (MAOI) therapy, antipsychotic drug therapy, and psychotropic drug-induced Parkinsonism/extrapyramidal syndrome (EPS) audits.

Brandon, Brenda M.; Knapp, David A.; Klein, Linda S.; and Gregory, John. "Drug Usage Screening Criteria." American Journal of Hospital Pharmacy 34, No. 2 (February 1977):146-51. NHSQIC #70739.

Screening criteria for 40 drugs frequently prescribed for adult use (indications for use, minimum/maximum daily dose and length of therapy) and 10 drugs for pediatric use (indications, dose and length of therapy, plus age restrictions) are listed. These criteria may be used to screen large numbers of prescriptions in order to rapidly identify instances of exceptional drug prescribing which can then be investigated further. Criteria were based on the scientific and

professional literature. Combination drugs deemed to be "irrational" were identified, and clinical documentation presented. By indicating that some products fail to meet any criteria for appropriate drug therapy, there is thus an acceptable basis for deciding to exclude these products from a drug list or formulary. The development of criteria in a drug use review program is not as difficult as getting physicians to accept them. It is useful, therefore, to involve physicians and pharmacists in the development and application of all aspects of a drug use review program.

Brodie, Donald C.; Smith, William E.; and Hlynka, John N. "Model for Drug Usage Review in a Hospital." American Journal of Hospital Pharmacy 34, No. 3 (March 1977):251-54.

A five-component conceptual model for drug usage review is discussed as it applies to hospitals. The components of the model are: (1) authority; (2) operational and demographic characteristics of the delivery system and the population served; (3) the existing profile of drug usage; (4) standards of appropriateness and review of drug usage; and (5) scheme of evaluation to measure the impact of the review. A drug usage review scheme in a hospital should: (1) improve the level of patient care and often reduce the cost of care; (2) improve the management and use of hospital resources; (3) clarify the drug components of patient care and help integrate pharmaceutical and other hospital services; and (4) improve the fact-finding capacity that can help identify and solve hospital problems.

Counts, George W. "Review and Control of Antimicrobial Usage in Hospitalized Patients: A Recommended Collaborative Approach." Journal of the American Medical Association 238, No. 20 (November 14, 1977):2170-72. NHSQIC #80338.

The Joint Commission on Accreditation of Hospitals (JCAH) has established standards for infection control requiring hospitals to evaluate periodically their use of antibiotics. This article points out the undesirable effects of antibiotics and suggests alternative approaches to utilization, monitoring, and control. One method of review is the prospective study; this can be a study of all patients receiving a particular antibiotic, or of all patients admitted with a particular disease or having a certain surgical procedure. The direction of the study can be set by the medical staff; it can then be carried out by the hospital's infection control staff, with the cooperation of the pharmacy and the microbiology laboratory. A basic requirement is a set of criteria for antibiotic usage. There should be a review of pharmacy data on utilization and costs, of hospital infection rates, and of patterns of bacterial resistance to antibiotics. An alternative to the prospective study is retrospective review of patient records by a multidisciplinary committee. Any review method must include follow-up studies to ensure the correction

of abuses. No single approach is effective for all hospitals, but a collaborative effort of some kind can accomplish the objectives of all concerned with antibiotic use in the hospital.

Craig, William A.; Uman, Stephen J.; Shaw, William R.; Ramgopal, Vadakepat; Eagan, Lloyd L.; and Leopold, E. Themis. "Hospital Use of Antimicrobial Drugs. Survey at 19 Hospitals and Results of Antimicrobial Control Program." Annals of Internal Medicine 89, No. 5, Part 2, Supplement (November 1978):793-95. NHSQIC #90295.

Costs and use of antimicrobial agents in 1976 at 19 hospitals were surveyed by review of pharmacy records. Total costs of antimicrobial drugs at individual hospitals ranged from $0.65 to $1.75 per patient day and accounted for 16 percent to 41 percent of total pharmacy drug costs. There was marked variation among hospitals in use of specific antimicrobial agents, especially cephalosporins and clindamycin. The cephalosporin and aminoglycoside antibiotics accounted for 66 percent of the total cost of antimicrobial agents. An 18-month antimicrobial drug control program at one hospital decreased antimicrobial drug costs by 31 percent. The major effect was in reducing cephalosporin use. The results of the control program document that a significant portion of hospital antimicrobial use is inappropriate and can be eliminated without apparent detriment to patient care.

Dillard, Kenneth R.; Yoshikawa, Thomas T.; and Guze, Lucien B. "Appropriate Usage of Antibiotics Improved by Surveillance Program." Hospitals 51, No. 19 (October 1, 1977):81-82, 84-85. NHSQIC #80131.

The overuse of antibiotics, aside from its deleterious effects on patients, is increasing hospitals' pharmacy costs. Harbor General Hospital in California initiated a one-year program of utilization monitoring in which prescription requests were reviewed by an infectious disease consultant, physicians were consulted when antibiotic requests seemed inappropriate, and a ten-day limit was set on single drug requests. The overall pattern of prescribing at the hospital improved. A comparison of the total dollar value of requested drugs and of the drugs actually approved for dispensation revealed an $82,000 saving in expenditures. The following year, a modified surveillance system--in which only high-cost, frequently prescribed antibiotics were monitored--resulted in equally impressive cost reductions and utilization improvements.

Dorsey, Richard; Ayd, Frank J.; Cole, Jonathan; Klein, Donald; Simpson, George; Tupin, Joseph; and DiMascio, Alberto. "Psychopharmacological Screening Criteria Development Project." Journal of the American Medical Association 241, No. 10 (March 9, 1979):1021-31. NHSQIC #01296.

A set of psychopharmacological screening criteria developed by a task force of the Peer Review Committee of the American Psychiatric Association is discussed. These criteria focus on patients with mental disorders who are hospitalized in short term facilities. The criteria should be considered as models for screening use. They are subject to local modification, and should not be considered prescribing guidelines or definitive standards. On the assumption that the criteria will be used primarily for medical audit, they are organized according to classes of drugs rather than by diagnosis. The criteria presume that the physician has personally examined each patient, documented his medical findings and involved himself in the formulation of a treatment plan. Most of the documentation recommended is already required in hospitals approved by JCAH. Review is recommended in the absence or presence of specified criteria in the charts of the majority of inpatients or outpatients receiving psychopharmacological medication. Specific benchmark criteria are presented for antianxiety medications, antipsychotic medications, fixed-ratio combination products, hypnotic medications, psychostimulant medications for children, tricyclic antidepressants, and MAO inhibitors.

Greenlaw, Cal W. "Antimicrobial Drug Use Monitoring by a Hospital Pharmacy." American Journal of Hospital Pharmacy 34, No. 8 (August 1977):835-38. NHSQIC #70960.

An antimicrobial drug use monitoring program which also provides clinical pharmacy services in a 635-bed hospital is described. The program includes culture sensitivity monitoring, antimicrobial use monitoring, aminoglycoside monitoring, physician consultation, and reporting of results to the medical staff. It requires 34 hours of pharmacist time per month, at an estimated annual cost of $4,100.

Gregory, John M. and Knapp, Deanne E. "State-of-the-Art of Drug Usage Review." American Journal of Hospital Pharmacy 33, No. 9 (September 1976):925-28.

Analysis of 22 drug use review (DUR) studies from medical, allied health and pharmaceutical journals (1970-1975) revealed deficiencies in content and methodology, such as implicit rather than explicit standards and lack of sampling and screening criteria, which lead to slow and subjective or unreliable reviews. More objective standards and procedures permit DUR to be undertaken by community pharmacies or small health facilities by technical staff, conserving the time of professional personnel for in-depth review. Additional problems

noted were that: (1) most DUR was retrospective (this is simpler than concurrent or prospective DUR, but is not of immediate benefit to patients); (2) antibiotics were the most frequently studied drug class, to the exclusion of other classes; and (3) feedback should be provided to the physician if DUR is to result in improved prescribing practices. DUR of prescribing practices was defined as including systematic data collection of prescription orders and evaluation of these orders on daily dose, length of therapy or quantity dispensed, or appropriateness of the drug itself. Data are also reported on components of DUR relating to standards and review procedures (personnel, facilities, computer usage, sampling, follow-up, financing).

Hazaleus, Ruth E. "Assessing Antibiotic Usage in a Community Hospital." Hospital Medical Staff 8, No. 11 (November 1979): 24-28. NHSQIC #01112.

Aminoglycosides are valuable drugs for treating infection, but they are expensive, may produce adverse reactions, and may not affect certain drug-resistant bacteria. Data from a study of aminoglycoside prescribing patterns resulted in a hospital infection control committee issuing recommendations which were later approved as standard medical practice. The recommendations require: (1) physician documentation of the need for the aminoglycosides; (2) culture and sensitivity tests of infection sites prior to initiation of therapy; (3) monitoring of kidney function prior, during, and after therapy with regulation of dosage according to kidney function; (4) tests of blood levels during therapy; and (5) maintenance of therapy for seven to 10 days. The hospital education committee conducted a continuing education seminar on antibiotic drug usage, providing physicians with the necessary information and incentive to make better therapeutic judgments. A follow-up study is planned.

Hemminki, Elina. "Review of Literature on the Factors Affecting Drug Prescribing." Social Science and Medicine 9, No. 2 (February 1975): 111-16.

This literature review enumerates the various factors affecting drug prescribing in Western countries. The influence of education on drug prescribing is difficult to establish because the success of education varies from country to country. The effect of advertising on drug prescribing is questionable. While some say there is little effect, the drug industry continues to pour a sizeable percentage of sales revenue into drug promotion. The role of colleagues in spreading knowledge for prescribing is an important one, although their effect seems to be secondary to factors such as education and advertising. The factors of control and regulation measures involving official drug registration are narrowly used by health authorities, but studies indicate that such measures exert a positive effect if used effectively. Demands from society and patients, as well as

doctors' characteristics, are two other factors mentioned; however, indications are that knowledge about the factors affecting prescribing is limited. National studies are necessary, since the nature of these factors may vary from one country to another. However, from the available literature, it appears that drug firms may be a major factor in Western countries. Further study is suggested to see whether it is more effective to control the prescription habits of the physician or the factors affecting him, such as advertising. Other factors, too, need further analysis.

Hlynka, John N.; Smith, William E.; and Brodie, Donald C. "Developing Drug-Use Profiles from Drug-Charge Records." American Journal of Hospital Pharmacy 36, No. 10 (October 1979):1347-51. NHSQIC #00307.

The potential for developing a drug-use profile from drug-charge records was studied at an 830-bed community hospital. Patient drug charges were reviewed retrospectively for one year (1975) to identify: (1) which key drugs accounted for a high percentage of cost and usage; (2) where key drugs were used within the hospital; (3) how they were used; and (4) who were the chief prescribers. Of the drugs used, 8 percent accounted for 80 percent of total drug product costs. Seven drug groups (10 percent of the total drug groups) appeared in the top 10 of both drug cost and quantity categories. Six individual drugs also appeared in the top 10 of both categories. According to cost, cephalosporin antibiotics were ranked first among drug groups but were sixth according to quantity. Analgesics-antipyretics were ranked first among drug groups by quantity and second by cost. Cephalothin was ranked first among individual drugs by cost and was not in the top 10 in quantity. Diazepam was ranked first among individual drugs by quantity and third by cost. Patients' drug-charge records can be used effectively to generate drug-use profiles for ongoing drug use review, quality assurance and cost containment programs.

Hoffmann, R.P. "Using the PAS System for Hospital Drug Utilization Review." Hospital Progress 60, No. 1 (January 1979):54-56, 68.

The PAS system, subscribed to by many hospitals, is readily adaptable to drug usage review. Useful for this purpose are PAS data on drug usage according to (1) drug type; (2) diagnosis; and (3) information supplied at patient admission. The PAS system also permits "special coding," or "targeting," of other data for review. Whatever the drug utilization system used, pharmacist input into the process is highly important.

Hotaling, William H. "PSRO: A Hospital Pharmacist's View." Hospital Formulary 10 (June 1975):290-92. NHSQIC #90453.

The PSRO law encourages non-physician practitioners to assist in developing standards for their particular services, to advise on the

interpretation of review data, and to relate the findings of review to their clinical activities. This pharmacist calls upon his colleagues to respond to this mandate and to define their profession's proper function in assuring the quality of pharmaceutical services. Pharmacists have traditionally been concerned with quality control of the drugs themselves, not of the services provided to patients. P & T committees have paid most attention to product selection and financial control; the American Hospital Association's Hospital Administrative Services (HAS) has encouraged this tendency by providing quantitative and fiscal information as a measure of pharmacy services. There is at present no realistic definition of optimum pharmacy practice; there is also a lack of scientifically valid research demonstrating the effect of particular services on the quality and outcomes of care. For example, no one has really proved that unit dose packaging really reduces medical errors, or that drug information services really reach the individuals who need them. Pharmacists should get on with the task of setting standards and measuring the gap between the achievable and the actual level of pharmacy service so that a record of progress may be plotted.

Hull, J. Heyward; Brown, H. Shelton; Yarborough, Frank F.; and Murray, William J. "Drug Utilization Review of Medicaid Patients: Therapeutic Implications and Opportunities." North Carolina Medical Journal 36, No. 3 (March 1975):162-63.

A North Carolina drug utilization review program under Medicaid examines, monthly, computer printouts of recipient drug purchases for prescription duplication, overutilization, and drug interactions, and has brought about a reduction in drug costs. It was found unfeasible to screen for noncompliance. Most studies dealing with adverse drug reactions have involved hospital patients; little attention has been paid to the problem with nonhospitalized patients. Treating adverse drug reactions costs approximately $3 billion a year. Of such reactions, 70 to 80 percent can be avoided by utilizing information on patient history and drug action. Therefore, care in drug selection and surveillance of drug use are indicated. PAID Prescriptions, administering the North Carolina Title XIX Medicaid program for prescription drug benefits, runs a drug utilization review program in which six pharmacists and one physician in each of four regions meet monthly. They inform local physicians and pharmacists by letter of unnecessary or inefficient drug use (including the patient's drug profile and information on possible drug interaction). Feedback will be requested, but the program's primary goal is to provide the information.

Kelly, William N.; White, Jaxon A.; and Miller, Douglas E. "Drug Usage Review in a Community Hospital." American Journal of Hospital Pharmacy 32, No. 10 (October 1975):1014-17. NHSQIC #50781.

A simple and effective manual drug usage review program in a community hospital is described. Fifteen randomly selected charts are screened each month by a drug information pharmacist. Charts demonstrating questionable drug therapy are forwarded to a physician member of the pharmacy and therapeutics committee; those showing questionable drug administration practices are referred to the nurse member of the committee. These committee members screen the questionable charts and refer to the entire committee those cases which require further follow-up. The committee categorizes the problems and communicates its recommendations to the individual practitioners involved. Recommendations focus on the legal ramifications of FDA-unapproved drug usage. During the first two years of the program, 341 charts were screened for drug usage and 62 of these were referred to the pharmacy and therapeutics committee for further review. In 20 cases, the committee sent a letter to the prescribing physician or his department chairman; in 16 cases, letters were sent to nursing administration.

Keys, Philip W.; DeSantis, Diann; and Duffy, M. Gonzolas "Multidisciplinary Audit of Digoxin." American Journal of Hospital Pharmacy 35, No. 8 (August 1978):935-38. NHSQIC #81306.

Use review of digoxin as part of a medical care evaluation study in a hospital is described. This drug audit within the hospital's quality assurance program used a multidisciplinary approach. The study was designed to measure the incidence of digoxin toxicity, evaluate monitoring practices for digoxin use, and evaluate the adequacy of digoxin dosing patterns. Forty-eight patients were involved. Results indicated that some patients were not adequately assessed in regard to renal function and digoxin serum level. Further, there was a 17 percent incidence of digoxin toxicity. Studies such as this give pharmacists an opportunity to use their knowledge of proper drug use through a structured hospital program.

Klapp, D. and Harrison, W.L. "Evaluation of Albumin Use by Medical Audit." American Journal of Hospital Pharmacy 36, No. 9 (September 1979):1205-09.

The appropriateness of albumin prescribing and accuracy of records of albumin use were studied at a 476-bed hospital. Medical records of 15 adults who had undergone surgery within one week of albumin administration were compared with eight prescribing and charting criteria that were developed by pharmacists. Charts of patients who did not meet every criteria were reviewed by a committee to determine if exceptions to the criteria were justifiable. Albumin prescribing was

empirical for approximately 60 percent of the patients. Albumin use as judged by laboratory values was inappropriate in three patients. Charting of the amount and rate of albumin administered was inaccurate, incomplete or difficult to interpret for eight (53 percent) of the patients. The dosage of albumin prescribed was inappropriate for two (13 percent) patients. Appropriate concomitant therapy (e.g., packed red blood cells) was not prescribed for two patients. For only three patients did the patient's charge correspond to the amount charted as being administered. On an annual basis, patient charges for albumin were projected to be $9,321 less than the hospital's cost for the product. The audit identified problems in albumin prescribing and charting that, when corrected, would result in cost savings and improved patient care.

Knapp, David A.; Knapp, Deanne E.; Brandon, Brenda M.; and West, Sheila. "Development and Application of Criteria in Drug Use Review Programs." American Journal of Hospital Pharmacy 31, No. 7 (July 1974):648-56. NHSQIC #40463.

The essential components of the drug use process are identified in order to develop objective criteria for drug utilization review. A specific set of criteria, developed by the staff of the University of Maryland School of Pharmacy for reviewing certain aspects of drug use for 65 common drugs, is set forth. A sample set of criteria for one set of data related to antibiotic therapy is discussed. The definitions of terms and concepts associated with drug use review and used by the Office of Professional Standards Review are presented in detail. Six steps of the drug use and prescription process are discussed in relation to the norms, criteria, and standards which have previously been applied at each step. The six stages are: (1) determining the need for a drug; (2) selection of specific drug products; (3) selection of regimen; (4) obtaining the drug product; (5) administration/consumption of the drug products; and (6) effect of drug therapy. The authors stress that the establishment of health care quality assurance programs depends upon the systematic development of objective criteria of drug use.

Knapp, David A. and Palumbo, Francis B. "Dollar Costs of Conducting Drug Use Review." Journal of the American Pharmaceutical Association NS 17, No. 4 (April 1977):231-33.

The total direct costs for one drug use review in each of four settings, excluding the developmental costs of criteria and the computer program, ranged from $887 to $1,344, with the cost differential reflecting differences in the number of prescriptions sampled and the method of data collection. Five categories of direct costs of conducting drug use review are identified and discussed: (1) development of screening criteria; (2) computer programming costs; (3) data collection costs; (4) data coding and processing costs; and (5) data

analysis and reporting costs. Costs within each of the five categories are broken down into costs by specific function or service. Costs for the development of criteria for 50 drugs (40 adult and 10 pediatric) were $3,068. Computer programming costs totalled $3,333. Data collection costs depended on the data source used and varied from $117 to $644 per 1,000 prescription orders sampled. The specific data collection methods are discussed. Data coding and processing costs totalled $535.35 per thousand prescription orders. Data analysis and report costs amounted to $290 per review. The indirect costs of drug use review are mentioned but not calculated.

Knapp, Deanne E.; Knapp, David A.; Speedie, Marilyn K.; Yaeger, Donna M.; and Baker, Carol L. "Relationship of Inappropriate Drug Prescribing to Increased Length of Hospital Stay." American Journal of Hospital Pharmacy 36, No. 10 (October 1979): 1334-37. NHSQIC #00310

The relationship of inappropriate drug prescribing to increased length of hospital stay was studied. The medical records of 77 cases of pyelonephritis were reviewed retrospectively. Appropriateness of antimicrobial drug therapy was judged by three types of explicit screening criteria: drug-specific, patient-specific, and match of drug to infecting organism. Patients whose therapy passed all the criteria were hospitalized, on the average, two days less than those whose therapy failed one or more of the criteria. This was a significant difference (P less than 0.05). Age, seriousness of the pyelonephritis, or method of payment appeared to have no significant moderating effect on this result. However, the increased length of stay may not have been associated with only inappropriate prescribing, because the inappropriately prescribing physicians kept their patients hospitalized longer beyond the point of symptom remission than did the appropriately prescribing physicians. The study suggests that successful interventions for improving drug therapy could result in large cost savings.

Knoben, James E. "Drug Utilization Review: Current Status and Relationship to Assuring Quality Medical Care." Drug Intelligence and Clinical Pharmacy 10, No. 4 (April 1976):222-28. NHSQIC #60660

In 1974, total expenditures for prescription drugs were approximately $11 billion, or greater than 10 percent of the total cost of medical care services. The magnitude of drug use in medical practice today is obviously considerable. Because of the large utilization of prescription drugs, there is a great deal of concern on the part of third-party payers to contain drug cost. There is evidence that the prescribing habits of physicians are poor and are probably contributing to high drug use. In addition, drug utilization is expected to increase in the years ahead, thereby requiring cost and quality control mechanisms such as drug utilization review (DUR) or peer review. This paper presents an overview of the current status of DUR

and its relationship to the assurance of quality medical care. Most United States systems are retrospective in nature and are based on screening drug claims by comparing drug prescribing to criteria of drug use. These criteria are commonly based on quantity standards of appropriateness. The primary deficiency of current DUR programs is the relative lack of measures of quality. Secondly, there exists a need to integrate drug use review into the overall medical care review process. This paper presents recommendations for demonstration and research efforts.

Knoben, James E. "The Role of Drug Information in PSRO Review." Drug Information Journal 11, No. 1 (January/March 1977):43-46. NHSQIC #70961.

The involvement of Professional Standards Review Organizations (PSROs) with drug therapy occurs most frequently in connection with medical care evaluations (MCEs), studies which assess the quality and use of health care services. When a MCE study on drug use is set up in an institution, drug information is needed both prior to and during the course of the study. Health education programs which are held to rectify a deficiency discovered by a MCE also need to be supported by adequate drug information resources. The Department of Health, Education and Welfare has also set up continuing and formalized drug use reviews to supplement PSRO studies which are limited both in time and scope. Much detailed drug information is needed for this program.

Kunin, Calvin M., editor. Practical Aspects of Antibiotic Review. Atlanta, Georgia: American Health Consultants, 1979.

This book is a collection of the papers presented at the First National Conference of Antibiotics held March 1979, in Atlanta. It is intended to assist all those who must design and conduct antibiotic reviews or audits in their hospitals. The subject is thoroughly explored to clarify the issues involved, present the current state of the art, explain methods and approaches, and provide practical advice. All relevant viewpoints are represented, including those of government regulators (FDA), accrediting bodies (JCAH), lawyers, clinicians, pharmacists, infection control practitioners, and medical records specialists. Various approaches to audits are explored and educational efforts are described. In "Antibiotic Audit and Quality Assurance," Dr. A.L. Komaroff presents an overview of quality assurance activities in general and relates them to antibiotic audit. "Setting Effective Criteria for Audit and Review" by Dr. John McGowan explores the process of developing guidelines for review. Other papers include "Common Mistakes in Antibiotic Usage," "Is Audit the Best Tool to Control Antibiotic Usage," "Can Machines Help? Reviewing Antibiotics with a Computer," and "Effects of a Monitoring Program on Cost and Therapeutics." The editor concludes

by pointing to challenges of the future: developing valid audit or review schemes; and linking the audit process to correction of the perverse incentives in medical practice.

Kunin, Calvin M. "Problem of Antibiotic Usage. Definitions, Causes, and Proposed Solutions." Annals of Internal Medicine 89, No. 5, Part 2, Supplement (November 1978):802-05. NHSQIC #90297.

Standardized surveillance methods are needed in order to obtain valid comparison among institutions concerning use of antimicrobial agents. These include use of data from the hospital pharmacy and review of routine orders for prophylaxis in surgery and for specific infectious diseases. Audits of individual agents should be based on standardized guidelines for use. Attempts to improve the quality of use of antimicrobial agents require understanding of the constraints of medical practice that affect use of drugs to solve problems. These include the practice setting, cost and availability of laboratory support, and patient expectation. Promotion by the pharmaceutical industry capitalizes on the motivation of the physician to help his patient, often in settings in which diagnosis and management are uncertain. Promotion is a continuous process beginning early in medical school and extending to the media and university teaching staffs. The overall solution to inappropriate antibiotic use requires more than educational programs. There should also be a well-structured hospital program regulating pharmaceutical representatives, the formulary, antimicrobial susceptibility tests, justification for high-cost agents, and development of mutually agreed on guidelines for use.

Latorraca, Rocco and Martins, Ronald. "Surveillance of Antibiotic Use in a Community Hospital." Journal of the American Medical Association 242, No. 23 (December 7, 1979):2585-87. NHSQIC #00444.

Continuing surveillance of antibiotic use was instituted at Trinity Memorial Hospital in Cudahy, Wisconsin, to inform and educate the medical staff. The system was based on the guideline audits of antimicrobial use published by the Veterans Administration Ad Hoc Interdisciplinary Advisory Committee on Antimicrobial Drug Usage. Individual charts of discharged patients were reviewed against criteria selected to be diagnostic of infection. Determinations were made as to the purpose of antibiotic administration--therapeutic, prophylactic, or empirical (therapeutic without evidence of infection)--and were noted on infection surveillance forms. Monthly tabulations of these data were forwarded to each department for peer review and identification of problem areas. In 1978, data were compiled from 9,385 patient records, representing 100 percent concurrent review of infections and antibiotics. Use of antibiotics decreased steadily from 40.5 percent in January 1978 to 29.5 percent in December with only a slight rise in October which coincided with an increase in

admissions for respiratory infections. The program is well accepted by the medical staff and has resulted in increased peer review and a decrease in antimicrobial drug costs.

LeRoy, A.A.; Morse, M.L.; and McCormick, W.C. Physicians' Responses to Peer Review and Drug Utilization Review Procedures of a Medicaid Drug Program. Jacksonville, Florida: PAID Prescriptions, 1976.

The drug utilization review (DUR) mechanism of the Florida Medicaid drug program administered by PAID Prescriptions was assessed after one year of operation and was shown to have significantly reduced drug expenditures in 39 percent of the cases examined. Eight regional committees, each consisting of four pharmacists and two physicians, reviewed patient drug profiles that exceeded one or more of the following monthly criteria: $50, eight claims, prescriptions from three physicians, or four purchases within one therapeutic class. Letters sent to physicians requested diagnoses, evaluation, and recommendations for improving the patient's drug therapy, and an indication of whether the physician was aware of the patient's exceptional drug use. Of the 4,700 physicians contacted throughout 1975, 68 percent responded to the DUR committee letters. Fifteen percent of the replies indicated an intention of changing the patient's medication. A six-month follow-up of these patients was made and the average saving per patient was found to be $99. Potential savings through this review program are estimated at 2 percent of annual benefits. The DUR committees plan to improve profile review and physician follow-up procedures and to familiarize greater numbers of physicians with the purpose of DUR. This should lead to greater savings.

Massoud, N. and Gudauskas, G. "The Utilization of a Clinical Pharmacist--a Way of Decreasing Medications in a Community Hospital." Drug Intelligence and Clinical Pharmacy 13, No. 5 (May 1979):266-71.

This article summarizes the results of a study designed to evaluate clinical pharmacy services as a means of reducing drug usage in a 170-bed community hospital. A total of 591 medication orders for 93 hospitalized patients was evaluated. A pharmacy resident made recommendations regarding the appropriateness of the medication order to the attending physicians. A team of reviewing physicians later evaluated these recommendations. The resident's suggestions were also monitored by a university-affiliated and experienced clinical pharmacist. The number of medications ordered which the pharmacy resident would have prescribed during consultation with physicians was 312 (53 percent), while the overseeing clinical pharmacist would have prescribed 352 (60 percent). Two hundred and fifteen therapeutic recommendations were provided by the pharmacy resident, of which 38 (17.6 percent) were carried out by the attending physician. The reviewing physicians did not agree with 37 of these recommendations. Twenty-two drug interactions were detected, of which 11 were thought to be of definite clinical significance by the pharmacy resident. The

study demonstrated that a 40 percent reduction in medication utilization could result in a community hospital, while the same level of therapeutic effectiveness was maintained, by using the services of a properly trained clinical pharmacist. The patient care appraisal committee which was appointed to evaluate the study reviewed the results and agreed that, based on the cost factor and improvement of patient care, clinical pharmacy services would be beneficial.

McGowan, John E.; Cross, Martha L.; Walker, H. Kenneth; and Shulman, Jonas A. "Reviewing Initial Choice of Antimicrobial Therapy - Problems for the Individual Hospital." American Journal of Hospital Pharmacy 36, No. 3 (March 1979):376-78. NHSQIC #00003.

The system used by a large county hospital for reviewing the initial choice of antimicrobial therapy in a medical service is described, and problems associated with such a review are discussed. Diagnostic and treatment standards were developed for 12 conditions; the standards were published and distributed to the medical staff. Reviews were conducted during one-week periods chosen at random. Patient records were screened first by post-graduate pharmacy students. Cases varying from the standards were discussed at a conference attended by approximately 100 hospital personnel. Participants decided in each case whether: (1) the variation from the standards was appropriate; (2) the standards were inappropriate and should be revised; or (3) the practices employed were inappropriate and required revision. Twenty-one reviews were conducted during a two-year period. Of the 458 cases in the first year, 330 (72 percent) conformed to the standards; during the second year, 328 (81 percent) of 406 cases conformed. Inappropriate variation from the standards decreased significantly from 10 percent (46 cases) in the first year to 4 percent (17 cases) in the second year (P=0.0016). Among the problems encountered were: (1) the lack of a satisfactory method to determine if a patient really needed antimicrobial therapy; (2) inability to agree on standards for some conditions; (3) inability to write standards that covered all variables in clinical practice; and (4) inability to determine conclusively the effect of the program because of many uncontrolled variables. Large-scale studies are needed to develop the best methods of drug use review.

Munster, A.M.; Weiner, J.; and Gibson, G. "Prophylactic Antibiotics in Surgery. Practices Within Surgical Services of the Veterans Administration." Journal of the American Medical Association 241, No. 7 (February 16, 1979):717-18.

A survey of prophylactic antibiotic-prescribing habits among chiefs of surgical services of the Veterans Administration yielded a 99 percent response. These responses have been compared with guidelines set by an expert committee on antimicrobial use for the VA central office. Assuming that 100 percent concordance with the standards of the committee is a desired state, the average hospital is approxi-

mately one-third away from this goal (average score, 62.4 percent). The majority of errors were those of overuse rather than underuse. The size of the service and the existence of a university affiliation had no influence on the results. Feedback to the chiefs of service regarding the use of antibiotics was informal and tended to be carried out on rounds rather than as a result of formal audits. Most senior surgeons indicated that they would be willing to be influenced by audit guidelines.

Palumbo, Francis B.; Knapp, David A.; Brandon, Brenda M.; Knapp, Deanne E.; Solomon, David K.; Klein, Linda S.; and Shah, Rohit K. "Detecting Prescribing Patterns through Drug Usage Review: A Case Study." American Journal of Hospital Pharmacy 34, No. 2 (February 1977):152-54. NHSQIC #70731.

Retrospective review of more than 1,000 prescription orders that included diagnostic data (for third-party payment) yielded information on prescribing problems such as mismatching diagnosis and prescribed drug, prescribing an inadequate dosage, insufficient or excessive length of drug therapy, and inadequate labeling information for the patient. Criteria for length of therapy, dose, and diagnosis were developed from the professional literature for 50 frequently prescribed drugs. Prescription information was analyzed by computer. Of 1,033 prescriptions 56 percent failed to pass one or more of the screens when compared with stated criteria. Mismatch between diagnosis and drug occurred in 23 percent of the cases. Insufficient length of therapy occurred in 10 percent of the cases, almost wholly with prescriptions for antibiotics. An automated retrospective drug utilizatcn review system can identify potential prescribing problems, which may then be examined and acted upon by a drug use review committee.

Pierpaoli, Paul G.; Coarse, James F.; and Tilton, Richard C. "Antibiotic Use Control--An Institutional Model." Drug Intelligence and Clinical Pharmacy 10, No. 5 (May 1976):258-67.

This paper describes: (1) the development and implementation of an institutional program of antibiotic use control co-sponsored by a Pharmacy and Therapeutics Committee and an Infection Control Committee; (2) the application and genesis of a practical methodology for both prospective and retrospective institutional antibiotic drug use review (DUR); and (3) the results of a retrospective review of cephalosporin use in 102 hospitalized patients over a 12-month period. The antibiotic DUR program includes a formal educational program and in-house controls on the use of certain antibiotics. The two committees have established rigid controls on the use of expensive, highly selective, or potentially toxic antibiotics. Regarding this latter category, house staff physicians prescribing them must have such orders countersigned by a representative of the Infection Control Committee. Of the 102 patients for whom antibiotic use was

studied, 49 percent were designated as having received cephalosporin derivatives rationally for the treatment of active infectious disease or for prophylaxis. The remaining patients received therapy that was judged to be irrational or questionable according to the criteria set up for the study. Also discussed in this paper is prospective DUR, using clinical pharmacy services and clinical microbiology monitoring systems.

Recco, R.A.; Gladstone, J.L.; Friedman, S.A.; and Gerken, E.H. "Antibiotic Control in a Municipal Hospital." Journal of the American Medical Association 241, No. 21 (May 25, 1979):2283-86.

The choice of an antibiotic for a patient is often a difficult decision. The clinician must contend with a bewildering variety of bacteria and use a number of expensive and toxic antimicrobial agents judiciously. To deal with the problems of excessive and inappropriate use, the medical staff of Coney Island Hospital established compulsory, prospective antibiotic control. Two years after initiation of this program, we analyzed changes in sensitivity patterns of hospital flora, physicians' prescribing habits and antibiotic use. A trend toward increasing resistance on the part of some Gram-negative isolates to certain beta-lactam antibiotics was noted. Antibiotic costs decreased an average of 38 percent, while prescribing skills improved.

Salzman, Carl and Van Der Kolk, Bressel. "Psychotropic Drug Prescriptions for Elderly Patients in a General Hospital." Journal of the American Geriatrics Society 28, No. 1 (January 1980):18-22. NHSQIC #00677.

A survey was made of drug prescriptions written for all medical/surgical patients in a general hospital on a single weekday in 1978. Of these 348 patients, 195 were over the age of 60. In this elderly group, 62 (32 percent) were receiving psychoactive drugs. Flurazepam was the drug most commonly prescribed (in 63 percent of the patients). Diazepam was the most frequently prescribed nonhypnotic psychoactive drug (in 29 percent). Neuroleptic drugs and phenothiazine anti-emetics (in 52 percent) were not prescribed for psychosis but for augmenting analgesia and sedation and for reducing nausea. The average daily doses were about 20 percent of those used to treat psychotic young adults. All antidepressants (in 9.7 percent) had been prescribed before admission. No monoamine oxidase inhibitors were used, and doses of tricyclic antidepressants were half to one-third lower than those used to treat younger depressed adults. Antidepressants, which pose a risk to the elderly patient, were overprescribed and underdosed.

Schroeder, Steven A.; Kenders, Kathryn; Cooper, James K.; and Piemme, Thomas E. "Use of Laboratory Tests and Pharmaceuticals: Variation Among Physicians and Effect of Cost Audit on Subsequent Use." Journal of the American Medical Association 225, No. 8 (August 20, 1973):969-73.

This study of the patterns of physician utilization of laboratory tests and prescription behavior revealed that great variation existed among physicians in costs of laboratory and drug use, a 17-fold variation in laboratory costs and a four-fold variation in drug costs. Physician knowledge of the results of the cost audit resulted in a 29.2 percent decrease in laboratory costs (P less than .01) and a 6.4 percent increase in drug expenditures (P less than .01). The physicians studied were 33 faculty internists. Ten to 15 patients per physician were chosen at random from among those patients meeting certain eligibility requirements, e.g., to have from two to eight of the medical problems on a "Master Problem List." No effort was made to study comparable groups, in terms of demographic and clinical characteristics, of the patients. All laboratory and drug costs for each patient during a three-month period in 1971 were totaled and calculated on an annual basis. Mean annual laboratory and drug costs for each physician's patients were calculated. Each physician was informed of his ranking (in terms of his patients' laboratory and drug expenditures) relative to other physicians. The study was repeated for a second three-month period in order to assess how physician behavior in ordering laboratory tests and prescribing drugs changed as a result of the cost audit. Several physician variables, e.g., physician age, and internal medicine board certification, were analyzed; there was no significant correlation between any of the physician variables and costs of care. The relative cost behavior of the physicians was generally consistent during the six-month period. The study did not attempt to measure quality of health care nor attempt to obtain information relating cost to either quality or efficiency of medical care.

Shapiro, Mervyn; Townsend, Timothy R.; Rosner, Bernard; and Kass, Edward H. "Use of Antimicrobial Drugs in General Hospitals: Patterns of Prophylaxis." New England Journal of Medicine 301, No. 7 (August 16, 1979):351-55. NHSQIC #00084

The patterns of prophylactic use of antimicrobial drugs were reviewed in 5,288 charts drawn by a random method from 20 randomly selected short-stay general hospitals in Pennsylvania. About 10 percent of hospitalized patients received antimicrobial drugs for prophylaxis in operations or nonsurgical procedures, and prophylaxis accounted for about 30 percent of all antimicrobial drugs administered in hospitals. The drugs used most often for prophylaxis were cephalosporins, followed by benzyl penicillins, ampicillin and tetracyclines, in that order. Despite indications that prophylaxis, when useful at all, is effective only when given concurrently with and for 24 to 48 hours

after operation, it was usually continued throughout hospitalization. Almost 80 percent of prophylactic antimicrobial drugs were administered at least 48 hours after an operation or procedure--suggesting that limiting prophylaxis to the first 24 to 48 hours, as currently recommended, would substantially reduce expenditures for antimicrobial drugs in hospitals.

"Special Update: Antibiotic Review." Hospital Peer Review 4, No. 10 (October 1979):131-42. NHSQIC #01298.

Four essential elements of antibiotic review are problem definition, realistic criteria, data collection and analysis, and feedback to the practitioners. At the September 1979 Update of the First National Conference on Antibiotic Review held in Los Angeles, four faculty members discussed each element in detail. In defining the problem, it was noted that costs will vary according to whether the review is prospective, retrospective or cross-sectional and whether the focus is management of disease, the disease itself, or the drug used to treat specific infections. Flexible guidelines are critical to the success of the review as is careful planning for process of data collection. The reports of results should focus on specific clinical situations relevant to the staff at the particular facility, and should utilize a variety of methods to ensure that the staff take note of the results. Two epidemiologists supported the idea of keeping the review simple by focusing on known problems of antibiotic use, such as surgical prophylaxis or hospital-acquired urinary tract infections. A detailed methodology to review the former was presented by Calvin Kunin, MD. William Craig, MD, of the University of Wisconsin, suggested that the community hospitals face different problems from teaching hospitals in instituting review programs. These can be mitigated by gaining the support of the medical staff and the Hospital Formulary Committee. Specific criteria used by one teaching hospital to limit use of cephalosporins, aminoglycosides, carbenicillin/ticarcillin, and clindamycin, were presented by Dennis Maki, MD. Kevin Buckley of the JCAH noted that hospitals attempting to meet the requirements of the new quality assurance standard will have considerable latitude in the problems they select for review. The JCAH surveyors will look for evidence, not only of monitoring activities, but also of activities leading to the resolution of any problems identified.

Spector, Reynold and Heller, Allan H. "Education vs. Restriction in Rational Use of Antibiotics." Hospital Formulary (April 1978): 273-75. NHSQIC #90298.

There is a consensus that the aminoglycoside antibiotic amikacin should be reserved for serious infections caused by gram-negative organisms resistant to other aminoglycosides. To avoid having to implement restrictions on utilization, the P & T committee of Peter Bent Brigham Hospital in Boston initiated a vigorous educational pro-

gram, followed by review of in-hospital use of the drug. Lectures were given by physicians in the hospital's infectious disease and clinical pharmacology divisions, grand rounds included a session on amikacin, and the hospital's newsletter carried a lead article on the subject. While this was underway, the pharmacy kept a record of physicians' orders of the drug. At the end of a seven-month period the charts of all patients treated with amikacin were reviewed and their treatment evaluated according to predetermined criteria for appropriate use, consultation prior to use, acceptable dosage, acceptable precautions for toxicity, and outcomes. In almost every instance treatment was appropriate; outcomes were also generally encouraging. Though this was not a controlled study, the committee believes that its educational program had a good effect, and is a viable alternative to a program of drug restriction.

Stolar, Michael H. "Conceptual Framework for Drug Usage Review, Medical Audit and Other Patient Care Review Procedures." American Journal of Hospital Pharmacy 34, No. 2 (February 1977):139-45. NHSQIC #70566.

The following concepts are discussed: (1) quality assurance schemes; (2) drug usage review; (3) utilization review; (4) peer review; (5) medical audit; (6) patient care audit; and (7) medical care evaluation studies. A framework within which all types of hospital quality assurance mechanisms can be constructed is proposed. The pharmacist's participation in the hospital's overall quality assurance scheme covers two fields: drug usage review and quality assurance of pharmaceutical services. Both functions may be considered as part of the pharmacy audit. The use of quality assurance schemes in skilled nursing facilities is discussed. Pharamacists serving in such facilities have quality assurance responsibilities similar to those of hospital-based pharmacists.

Stolar, Michael H. "Drug Use Review: Operational Definitions." American Journal of Hospital Pharmacy 35, No. 1 (January 1979):76-78. NHSQIC #01242

A distinction is made between drug use review (DUR) studies and programs. DUR studies can be quantitative or qualitative. Quantitative studies involve the collection, organization and display of estimates or measurements of amounts of drug use. Qualitative studies are multidisciplinary operations which collect, organize, analyze and report information on the rationality of the drug use base. A DUR program is an ongoing method of assuring the quality of drug use through the employment of standards and efforts to correct drug use not consistent with these standards; the effectiveness of corrective actions is measured.

Vogel, David P., et al. "Pharmacy Unit Devises Quality Assurance Plan." Hospitals 54, No. 11 (June 1, 1980):83-85. NHSQIC #01353.

This article describes the quality assurance program implemented by the pharmacy department at the University of Illinois Hospital, Chicago, to provide consistent distributive, clinical and educational services. The article discusses the minimum standards of pharmacy practice for in-patient care and the resulting compliance audit procedure. The quality assurance program described follows a five-step model: (1) definition of quality (using easily measured explicit and implicit criteria and standards); (2) quality assessment; (3) education and change; (4) reassessment of quality; and (5) redefinition of quality. The program resulted in promoting consistency of services among satellite pharmacy units and acknowledging the clinical pharmacy contributions to patient care. However, the limitation of a compliance audit is that it measures the quantity of service and not necessarily the quality. Additional programs concerned with content-oriented standards need to be developed in order to form a total quality assurance program.

White, Sara J. and Godwin, Harold N. "A Unit Dose Quality Assurance Program." Hospital Pharmacy 12, No. 2 (February 1977):90-96. NHSQIC #80277.

The issue of quality assurance is especially germane to the innovative services now being provided by hospital pharmacists. This paper describes the development and functioning of a unit dose system at the University of Kansas Medical Center, Kansas City. Ten outcome criteria were established and two forms developed, one for the pharmacy and one for nursing staff to complete when a deviation from the outcome criteria occurred. These forms are reproduced and their use described. Initial impressions of the program are that it has been well received and used by the nursing department and has provided immediate feedback on the functioning of the unit dose system. This has enabled the pharmacy to continually monitor and improve the system.

Yarborough, Frank F. and Laventurier, Marc F. "Peer Review Works via Committee of 7: 6 Pharmacists Plus One Physician." Pharmacy Times 40, No. 3 (March 1974):34-37. NHSQIC #40272.

The activities of multidisciplinary Pharmacy Peer Review Committees in North Carolina are described. Using an effective system of computer documentation and professional communication, the committees have produced a significant reduction in drug utilization and costs. In addition, an improvement in the quality of drug therapy in the Medicaid pharmacy program was achieved. Each committee, consisting of six pharmacists and one physician, reviewed exceptional patient profiles which indicated overutilization of drugs. Letters were then

sent out requesting further information from physicians and pharmacists. It is suggested that this peer review experience can be a prototype for medical PSROs dealing with drug products. A list of members of the four regional committees and statistical results of the committee meetings are included.

Zelonis, Anthony; Fleischer, Nicholas; and Walling, Richard. "A Pharmacy Quality Assurance Program." Hospital Formulary 14, No. 2 (February 1979):205, 208-9, 211. NHSQIC #01297.

The pharmacy quality assurance program at the USPHS Hospital on Staten Island was instituted to permit ongoing evaluation of the quality of pharmaceutical services and to upgrade the overall quality of professional services. Outpatient prescriptions, the inpatient unit dose program and intravenous admixtures are all evaluated for completeness of recordkeeping, correct number of doses, and shelf life. In addition, the inpatient unit doses and the intravenous admixtures are checked for filling accuracy and medication delivery times. Acceptable and nonacceptable ratings are noted on evaluation worksheets which are retained to detect recurring problems. The study has shown pharmaceutical services to be of acceptable quality although there are several areas which need follow-up. These include turnaround time for processing inpatient unit dose orders, and the need to include rates of administration on IV labels. Use of brand names instead of generic names, misspelled patients' names, and lack of auxiliary labels are some of the problems encountered with outpatient prescriptions. In view of these results, and to allow evaluation of other services, the quality assurance program is being continued.

Zelnio, R.N. and Gagnon, J.P. "The Effects of Price Information on Physician Prescribing Patterns--A Literature Review." Drug Intelligence and Chinical Pharmacy 13, No. 3 (March 1979):156-59.

Rising expenditures for drugs under Medicare, Medicaid, and other federally funded programs have prompted the Department of Health and Human Services to adopt regulations aimed at achieving cost containment. The Maximum Allowable Cost (MAC) regulations exemplify this effort. One of the components of these regulations proposes to generate added cost savings by influencing physicians to prescribe lower cost drugs to a greater extent. This would result from the provision of drug cost information to the physicians. The literature was reviewed in an attempt to predict the impact that drug cost information might have on the physician's prescribing decision and reimbursement costs. The conclusion reached is that physicians will not incorporate price information into the prescribing decision to the extent necessary for the achievement of cost savings. An alternative strategy is proposed which utilizes pharmacists to provide prescribers with drug information. This strategy is based on the

efficacy of the drug industry's detailmen in providing drug information, the availability of trained manpower, and empirical evidence supporting this activity's cost containment potential. Finally, the need for evaluative research in five areas is suggested prior to the implementation of programs similar to that proposed by the Department.

ANESTHESIOLOGY

Vail, J. David. "Anesthesia Nursing Audit? Yes!" American Association of Nurse Anesthetists 46, No. 2 (April 1978):125-29. NHSQIC #90400.

Anesthesia audits can help nurses improve patient care, educate and reeducate the anesthesia staff, and insure performance within defined standards of care. The retrospective audit should include both process and outcome criteria; pre-anesthetic and post-anesthetic surveillance and evaluation are important components of the process criteria. The audit can measure the achievement of outcome goals set by the anesthetist; these goals can be incorporated in the overall nursing care plan of the patient. For an effective anesthetic audit, outcome criteria should be established for specific agents or techniques, rather than for specific diagnoses. Moreover, the anesthetist should document any function he performs for the patient, to maintain the patient's chart as a measure of patient care. The author recommends the following steps for setting up an anesthetic audit program: (1) review the literature; (2) attend workshops and seminars; (3) establish a committee; and (4) write criteria based on the individual needs of the department to be audited.

Vail, J. David. "Retrospective Anesthesia Nursing Audit--Process or Outcome Criteria." Military Medicine (August 1979):537-39. NHSQIC #01082.

The anesthesia nursing audits have generally been process audits focusing on the worker, his methods and techniques. Outcome audits focus on the patient and his response to care. In neither case is the audit as comprehensive as it might be. At the U.S. Kimbrough Army Hospital, Fort Meade, Maryland, both process and outcome criteria were developed for each category or agent used within the three board anesthetic classifications. Audit information can be retrieved easily because an anesthetic record is kept and coordinated by the operating room clerk. Retrieval by medical diagnosis is another acceptable method. The whole anesthetic procedure can be reviewed: the process; response; management of complications; and patient education.

RESPIRATORY THERAPY

Block, A.S. "Model for Evaluating the Clinical Skills of Respiratory Therapy Personnel." Respiratory Care 23, No. 3 (March 1978):269-80.

Just as in any other profession, respiratory therapists need the benefits of constant evaluation and refinement of skills. The American Association for Respiratory Therapy, through a federally funded project, has developed a model for criterion-referenced clinical evaluation and application of an instrument designed for evaluating essential respiratory therapy clinical skills. The instrument consists of five parts: performance elements list, rater test specification, performance scale descriptions, rating form and key, and narrative critique form. For validity, this instrument depends on inter-rater reliability and standardization of evaluation conditions. Inter-rater reliability is ensured by training raters in adherence to preset standards of mastery to be demonstrated by the therapists and in pointing out errors to be avoided, notably content deficiency, psychomotor deficiency, verbal miscommunication, and nonverbal interference proceedings from the therapists. Common rating errors and guidelines and instructions for standardizing rating procedures provide additional information, while three appendices present samples of the practitioner performance evaluation instrument, performance scale descriptions for arterial puncture, and narrative critique form.

Buckingham, William B. "COLD War: Rationale for Criteria to Assess Respiratory Therapy for Patients with Chronic Obstructive Lung Disease." Quality Review Bulletin 3, No. 9 (September 1977):22-24, 28. NHSQIC #70935.

The incidence of chronic obstructive lung disease (COLD) is increasing, portending repeated hospitalization for respiratory therapy for a large segment of the population. This article suggests criteria for an audit to assess the outcomes of such therapy for emphysema and chronic bronchitis. Specific criteria have been written for oxygen therapy, intermittent positive pressure breathing (IPPB), ultrasonic nebulization, volume-cycled ventilation, high humidity mask, postural drainage, and chest physiotherapy. Since a goal of treatment is the avoidance of rehospitalization within a year, special attention has been paid to criteria for admissions, avoidance of complications, and for arrangements for outpatient therapy.

Costello, Gerald E.; Cantey, William C.; and Mahon, William F. "Medical Care Evaluation Studies: A Philosophical Overview." Journal of the South Carolina Medical Association 74, No. 12 (December 1978): 538-41. NHSQIC #90370.

The South Carolina Medical Care Foundation recently received two Medical Care Evaluation Studies from delegated hospitals on the topic of "Total Respiratory Support." The differing criteria used in each study illustrate two philosophical approaches to medical audits. A medical staff that saw the audit as punitive in nature, or just as a way to demonstrate care effectiveness, would be likely to set very loose or generalized criteria; a staff that perceived the audit as an educational tool, or as a means to achieve the best care possible, would probably select more specific criteria. Audit findings can have far-reaching medical care implications if wisely used in conjunction with continuing medical education (CME). CME programs are often faulted for concentrating on topics which have little worth or relevance to the learner MCEs, provided that they are based on well established, specific criteria, can underpin an effective CME program by guiding the choice of more appropriate topics.

InterQual, Inc. Patient Care Evaluation for Respiratory Therapy. Chicago, Illinois: InterQual, Inc., 1978.

This manual is designed to give respiratory care personnel a thorough understanding of audit methodologies and to assist them in developing a beneficial patient care evaluation system. The rationale for respiratory therapists' involvement in patient care evaluation is that the enormous growth in respiratory therapy personnel (partially due to Medicare and Medicaid requirements) has brought an increased concern with cost containment and accountability which requires that providers of respiratory care services demonstrate their effectiveness and contributions to the quality of patient care. Regulatory factors include JCAH standards and PSRO requirements for Medical Care Evaluation studies. The three most widely used evaluation methods are input, process, and outcome assessment. The four phases of the evaluation process are: (1) measures, which consists of audit specifications and criteria development; (2) measurement, which is composed of data retrieval and reporting; (3) analysis, which includes peer review of findings; variation, exception, and complication rates; and deficiency data; and (4) action and reporting. Step-by-step guides to the use of InterQual's new audit forms are provided. The implementation of evaluation programs must be efficient and practical. If it is impossible for a small department to conduct the audit process by itself, it may become involved in a combined or regional evaluation effort. Concurrent data collection procedures, sample criteria sets and a completed audit are provided.

Levy, P.A.; Rutherford, H.G.; and Shepard, B.M. "Usefulness of Preoperative Screening Tests in Perioperative Respiratory Therapy." Respiratory Care 24, No. 8 (August 1979):701-09.

The incidence of postoperative pulmonary morbidity was studied in 910 surgical patients who had received preoperative screening by routine history-physical examinations, chest x-ray, and spirometry. Retrospective data were correlated with results of the preoperative screening procedures to calculate accuracy and efficiency of each test and test-combination. Use of the data to predict total cost of therapy, and cost per patient benefited, is described for a protocol of perioperative respiratory therapy when it is administered to all patients with positive screening tests. The optimum screening procedure is identified by comparison. It was shown that when an optimum screening procedure is used, with therapy administered only to patients with positive screening tests, about 80 percent of at-risk patients can be identified preoperatively and the cost of therapy can be reduced by up to 50 percent, or, in a selected population, by up to 75 percent. A screening procedure using all three of the tests studied, in combination, was shown to provide maximum economy of therapy with minimum loss of efficiency. The routine history-physical examination alone, for identification of at-risk patients, was shown to be inaccurate and inefficient. Spirometry was shown to be equally as useful as chest x-ray in improving the accuracy and efficiency of screening procedures.

Medical Care Evaluation Systems. "Approaches to the Review of Respiratory Therapy Services." Division of Peer Review, U.S. Health Standards and Quality Bureau, Technical Assistance Document No. 22, August 1980. NHSQIC #01351.

Sample screening criteria for review of often misused respiratory therapy services are presented as a technical aid for PSROs attempting to develop a rational approach to review of ancillary services utilization. Although many ancillary services may be misutilized, with resultant increased risks to patients and increased costs, it has been difficult to establish criteria for reviewing the necessity, appropriateness, and quality of services. Respiratory therapy is typical of the newer ancillary fields in which technology is advancing more rapidly than is consensus on its appropriate use. A panel of experts in the field selected five areas of potential misutilization on the basis of risk to the patient, volumes of utilization, and cost per service. A second panel selected preliminary criteria for multidisciplinary review of these areas. Although it was agreed that the most important area of respiratory therapy services that should be reviewed is the respiratory care plan, in-depth review of such a broad scope was considered impractical for this study. Criteria were selected to address issues of both quality and utilization in the areas of oxygen therapy, aerosol therapy, inspiratory (intermittent

positive pressure breathing), incentive spirometry, and bronchopulmonary hygiene. Sources of information are listed for each of seven criteria categories. It is noted that all improvements in health care must occur within the framework of the interaction between the patient, practitioner, and organization. Review of respiratory therapy services at the local level should be designed to assess specifically identified problem.

REHABILITATION THERAPY

Allsop, Kent G. and Wortley, Don W. "Quality Physical Therapy: One Chapter's Approach." Physical Therapy 57, No. 9 (September 1977): 1016-20. NHSQIC #70824.

Quality care is a goal for which physical therapists strive. Federal legislation has provided the impetus to create quality assessment mechanisms. The Utah Chapter of the American Physical Therapy Association has been instrumental in establishing three distinctly different approaches to ensure the quality of physical therapy services within the state. This article describes the three approaches.

American Occupational Therapy Association. Patient Care Evaluation in Action. An Audit Manual for Occupational Therapists. Rockville, Maryland: American Occupational Therapy Association, 1978.

The best ways to ensure that occupational therapists participate in quality review activities are through availability of training in audit methodology, initiation of audit in occupational therapy departments, participation in multidisciplinary audits, and development of statewide peer review systems. This manual can serve as a step-by-step guide for occupational therapy departments conducting patient care evaluation studies. There are three major categories of audit activity: preparing the audit; gathering and analyzing data; and solving problems revealed by the study. Preparing a patient care evaluation study involves selection of the audit topic, development of criteria, and ratification of criteria. Data collection and analysis is accomplished through chart review, analysis of variations, and problem identification. The final step of the audit process consists of planning, implementing, and evaluating the results of remedial action. Sample psychiatric and physical disability occupational therapy audits are provided throughout the manual. A glossary and sample forms are also included.

American Physical Therapy Association. Physical Therapy Patient Care Audit. Washington, DC: American Physical Therapy Association, 1977.

Patient care audit is a method, based on the principle of peer review, of assessing the structure, process, and outcome of health care. It usually consists of a retrospective evaluation of a specific aspect of the care of a selected group of patients. It should be voluntary, educative, and non-punitive, with a commitment to bring about needed improvements in care. This manual has been prepared by the American Physical Therapy Association to assist physical therapists in meeting PSRO and JCAH requirements. It contains the following materials: (1) the contents of the physical therapy audit manual developed by the California Medical Association and the California Hospital Association; (2) an audit manual for speech pathology and audiology, prepared with HEW support; (3) a modified and simplified JCAH audit for physical therapy; (4) a glossary; (5) guidelines for workshop leaders; (6) suggestions for implementation of an audit program; and (7) a bibliography.

Breckenridge, Karen. "Medical Rehabilitation Program Evaluation." Archives of Physical Medicine and Rehabilitation 59, No. 9 (September 1978):419-23. NHSQIC #90300.

Health care providers must improve their methods of evaluating the services they provide; otherwise the government will step in and impose arbitrary and inflexible controls. Medical rehabilitation facilities are already required to implement an audit or patient care evaluation program in order to meet JCAH and CARF (Commission on Accreditation of Rehabilitation Facilities) standards and to qualify for PSRO delegated status. The Hospital Utilization Project (HUP) Rehabilitation Program patient data system is an invaluable tool for administration, utilization review, and program evaluation. It includes a functional status classification (FSC) system which makes it possible to measure the degree of improvement of each patient. There is also a system for collecting and reporting follow-up data, and a section for medical care evaluation studies. A mechanism for monitoring PSRO review activities should be available early in 1979.

Carey, Raymond G. and Posavac, Emil J. "Program Evaluation of a Physical Medicine and Rehabilitation Unit: A New Approach." Archives of Physical Medicine and Rehabilitation 59, No. 7 (July 1978):330-37. NHSQIC #90301.

Rehabilitation units must meet the increasing demand for empirical documentation of the quality of care patients receive. Hospitals wanting to do program evaluations will find few published materials providing norms by which to judge the adequacy of the functional outcomes achieved by their rehabilitation patients. The purpose of this research was to develop an approach to program evaluation that

would serve accreditation needs and would be relatively inexpensive to implement. Sixty-nine consecutive admissions for cerebrovascular accidents (CVA) were assessed on activities of daily living (ADL) and cognition using a behaviorally defined procedure called the "level of rehabilitation scale" that was developed for program evaluation purposes. Nurses and spouses of patients were interviewed to obtain the observations that were rated. Further ratings on ADL and cognition were made at discharge. Those at home six weeks and four and one-half months after discharge were assessed on the same scales and on home-relevant activities. Experience with the instrument showed that ratings of function can be made in a reliable and valid fashion. The research provides the beginning of the accumulation of improvement norms for CVA inpatients and documents maintenance of improvement four and one-half months after discharge. Hospitals and rehabilitation units can utilize these norms and this method of program evaluation economically using nonclinically trained staff.

Chamberlin, R.T. "Approaches to the Evaluation of Physical Therapy Services." Journal of the Maine Medical Association 66, No. 2 (1975):46-49, 64. NHSQIC #60114.

This paper describes several attempts made to evaluate the effectiveness of physical therapy services in an acute general medical surgical hospital. Comparison of the methods used against at least one accepted method from the literature was accomplished. Recommendations for improving the techniques of evaluation of physical therapy services are made.

Chekryn, Joanne and Roos, Leslie L. "Auditing the Process of Care in a New Geriatric Unit." Journal of the American Geriatrics Society 17, No. 3 (March 1979):107-11. NHSQIC #90492.

To assess whether the objectives of a new extended care unit were reflected in the care of the patients and in the outcome of that care, an audit of the patients' records was performed. The audit sample involved 101 geriatric patients who had been admitted to the unit for rehabilitation therapy, and then discharged. The study included assessment of the records for compliance with individual audit criteria, examination of the records in terms of a composite audit score, and analysis of the relationship between these scores and three outcome indices. Although the audit did not show a significant correlation between recorded care processes and treatment outcomes, it did reveal the extent to which the unit's goals were reflected in the care process.

Egan, Ann M. "Peer Review: One Department's Experiences." Physical Therapy 59, No. 7 (July 1979):877-80. NHSQIC #00153.

In 1971, the professional staff of the Department of Physical Therapy at University Hospitals of Cleveland established a peer-review system based on explicit retrospective chart audit and implicit patient care review. This review is performed monthly by a three-member committee composed of members of the staff who all serve on a rotating basis. One therapist is reviewed each month. One or more of the designated therapist's patient charts are randomly selected for review. The review process includes examination of the physicians' and nurses' notes, comparison of the completed record with a set of predetermined standards, review of patient care to determine overall appropriateness and completeness of treatment, and determination of any demonstrated variations or deficiencies. Once completed, all records, review activities, and committee conclusions and recommendations are discussed by the committee with the reviewee. This program has been judged successful in meeting the department's goals.

Hack, Laurie; Logue, George; and Oatis, Carol. "Evaluating Physical Therapy for Patients Undergoing Meniscectomy." Quality Review Bulletin 5, No. 9 (September 1979):6-10. NHSQIC #00181.

Physical therapy is particularly important to patients' full functional recovery following meniscectomy. The authors present several approaches to assessing the physical therapy provided to patients, including suggested audit criteria, process studies, and patient satisfaction surveys. Ways to assess the effect of preoperative patient evaluation and therapy, an increasingly vital aspect of therapy for these patients, are also discussed.

Idzikowski, Christine and Landers, Maxine. "Revised Peer Review System." American Journal of Occupational Therapy 31, No. 9 (October 1977):582-83. Ostrow, Patricia C. "Subjective/Objective Peer Review Procedures" [Letter]. American Journal of Occupational Therapy 32, No. 2 (February 1978):118. NHSQIC #70939.

The occupational therapy department at University Hospitals of Cleveland has revised its peer review system to provide greater feedback to the therapists under review. Charts are selected at random and reviewed by a group of about 12 members including therapists, occupational therapy assistants, and students. At this group meeting the therapist has an opportunity to explain his rationale for treatment. The group decides upon any necessary remedial action and continues to follow the therapist's progress. If problems continue a personnel performance evaluation may be written, based in part upon the peer review sessions. The authors suggest that their program may meet PSRO and JCAH requirements. However, in a letter to the editor, Patricia Ostrow, the director of the American Occupational Therapy Association's quality review program, takes issue with this claim.

Ostrow points out that PSRO and JCAH require review of groups of charts according to pre-determined criteria, whereas the University Hospitals system apparently uses subjective criteria and employs a cumbersome review of single charts by many professionals. Futhermore, according to the AOTA's spokesman, PSRO and JCAH call for evaluation, not only of documentation, but also of the processes and outcomes of care. AOTA has developed materials describing peer review systems meeting these requirements.

InterQual, Inc. Patient Care Evaluation Manual for Rehabilitation Disciplines. Chicago, Illinois: InterQual, Inc., 1979.

The rationale, procedures, and approaches for evaluation of rehabilitative services are presented in detail in this 200-page manual. Section I includes the JCAH evaluation requirements for rehabilitative disciplines; discussion of structure, process, and outcome evaluations; and delineation of the four phases of evaluation and the roles of the evaluation committee members. The section on evaluation procedures for rehabilitation services discusses what topics to measure, how to handle the data, and how to follow up on findings. Section III is replete with sample data, charts, and tables. Section IV delves more specifically into rehabilitative evaluation structure in relation to committee organization, timing of data collection and use, reporting mechanisms, and regional studies. The JCAH Quality of Professional Services Standards, the Standards of the Commission on Accreditation of Rehabilitation Facilities, and numerous sample forms also appear in this manual.

Kirchman, Margaret Mary. Assessment of the Quality of Care in Occupational Therapy in Selected Michigan Hospitals. Ann Arbor, Michigan: University of Michigan Press, 1973.

A study designed to develop and test a methodology for assessing the quality of care in occupational therapy is described. Occupational therapy practice in selected Michigan hospitals is examined using an adaption of Donebedian's frame of reference to quality, structure, process, and outcome. Patient records in teaching hospital and nonteaching clinical settings were chosen by proportionate stratified random sampling. The questionnaire used to determine structure accompanies the text. The retrospective process and outcome analyses of the patient records are discussed as are the normative standards used. Five components (evaluation, program planning, program implementation, reevaluation, discharge planning) by which to rate process are identified. Ratings of activity of daily living, job and homemaking, and social objective assessments were used to measure outcome. Significantly higher quality, as measured by process, was found in the educational clinical settings. The absence of significant differences in quality, as measured by outcome, is said to derive from the paucity of treatment-result recordkeeping. Tables and a bibliography accompany the text.

Kirchman, Margaret Mary. "The Quality of Care in Occupational Therapy: An Assessment of Selected Michigan Hospitals." American Journal of Occupational Therapy 33, No. 7 (July 1979):425-31. NHSQIC #00125.

In this study, a methodology was developed and tested for assessing the quality of care in occupational therapy between educational and noneducational clinical settings, as measured by process and outcome. An instrument was constructed for an external audit of the hospital record. Standards drafted by the investigator were established as normative by a panel of experts for use in judging the programs. Hospital records of 84 patients with residual hemiparesis or hemiplegia in three noneducational settings and of 100 patients with similar diagnoses in two educational clinical settings from selected Michigan facilities were chosen by proportionate stratified random sampling. The process study showed that occupational therapy was of significantly higher quality in the educational settings. The outcome study did not show significant differences between types of settings. Implications for education and practice are discussed.

Kuntavanish, Anne A. and Ostrow, Patricia Curran. "The Outcomes of Back Conservation Education." Quality Review Bulletin 6, No. 4 (April 1980):22-26. NHSQIC #01354.

As part of a larger multidisciplinary study conducted at an acute care hospital, a three-phase study focused on an occupational therapy back conservation education program. A problem in care--limited patient education about back conservation--was identified. Because dissemination of information about underutilization of the program improved referrals only slightly, the basic procedure for referral was changed; this resulted in significant improvement. Flexibility and innovation in assessment approach were demonstrated by a post-discharge patient questionnaire and literature review utilized in the final phase of the study.

Landers, M.S. "Peer Review and Record Review Systems." American Journal of Occupational Therapy 29, No. 4 (1975):226-28.

This paper describes the implementation of both peer review and record review systems as initiated at the occupational therapy department of the University Hospitals of Cleveland. Peer review evaluations can be used to ascertain a therapist's need for continuing education in a specific area, to evaluate and improve standards of practice, to gather statistics on professional objectives, and to develop Professional Standards Review Organization criteria. The system of peer review stimulated an improvement in documentation of services provided by occupational therapists, as well as in critical self-awareness of individual strengths and weaknesses. A separate method of record review was instituted to provide a basis for evaluating individual performance for either recognition or disciplinary purposes. Unlike peer review, record review results become incorporated into the therapist's personnel record.

Mansfield, Margo. "The Occupation of Therapists." Quality Review Bulletin 4, No. 4 (April 1978):8-12. NHSQIC #00496.

In preparation for a multidisciplinary psychiatric department audit in their hospital, occupational therapists developed generic screening elements to assess care provided by members of their own profession. By examining tasks involved in treating patients and in recording information in records, the therapists attempted to abstract the essential elements to be included in audit criteria. Most of the screening elements in an occupational therapy audit are derived from discharge records made by the therapist. The screening elements which were selected to assess the discharge status of patients included: performance of self-care and leisure activities, participation in occupational therapy sessions, voluntary attendance at these sessions, initiation of social interactions, and concentration on tasks. In addition to discharge status criteria, a monodisciplinary audit should clearly record items that reflect on patient outcomes. The performance of audit studies complies with federal and state mandates to demonstrate evidence of quality of care, and spurs practitioners toward appropriate documentation.

Ostrow, Patricia C. "Peer Review in Occupational Therapy." Quality Review Bulletin 3, No. 6 (June 1977):1218. NHSQIC #70859.

Audits, whether monodisciplinary or multidisciplinary, can improve the services offered by occupational therapists. The monodisciplinary audit is performed by occupational therapists alone but should be coordinated with the medical record department and the medical audit committee to fit into an overall audit program. The multidisciplinary audit, conducted by members of more than one health care profession, can help a facility resolve treatment overlap problems and can prevent overutilization or underutilization of services. Two problem areas discussed in this paper are referral and outcome; a table of referral guidelines and outcome criteria is provided. There is also a discussion of the rules and regulations in the PSRO amendment for therapists in peer review. This year's policy guidelines to PSRO specifically addressed the responsibilities of nonphysician health care practitioners. The American Occupational Therapy Association (AOTA) has conducted a two and one-half year national audit education program with seminars and workshops. A recertification procedure was developed to increase the number of occupational therapists skilled in audit. As a result of these programs, referral patterns have improved and insurance coverage has increased due to better documentation of occupational therapy processes and outcomes.

Ostrow, Patricia C. and Jones, E. "Peer Review for Nonphysicians." Hospitals 53, No. 23 (December 1, 1979):66-69. NHSQIC #00626.

With the inclusion of health care practitioners other than physicians in hospital quality assurance programs, both in the new Joint

Commission on Accreditation of Hospitals quality assurance standard and the final PSRO regulations governing hospital review point up the growing demand for peer review at all levels of professional health care, not just for physicians. The specific contents of the relevant PSRO transmittals are discussed, providing a summary of present policies concerning nonphysician peer review. Particular reference is given to those parts which provide that review of nonphysician practitioners be undertaken by appropriate peer practitioners. Also included is a discussion of review requirements for ancillary services.

Quality Review Bulletin 4, No. 11 (November 1978):1-36. NHSQIC #90299.

Because the goal of rehabilitation is to return a traumatically disabled person to the highest attainable level of functioning, communication and coordination among multiple health care disciplines are essential. This issue of Quality Review Bulletin examines activities of rehabilitation teams dealing with cerebrovascular accident (CVA), and emphasizes the need for a planned rehabilitation program that integrates the services of all professionals to promote optimal physical functioning, psychological adjustment, and social reintegration. A variety of experiences with developing criteria for evaluating the appropriateness and outcome of care given to CVA victims are reviewed. A set of criteria for admission, medical management, and rehabilitation management, developed jointly by the American Academy of Neurology and the American Academy of Physical Medicine and Rehabilitation, is described. Other articles examine the roles of social workers, occupational therapists, and physical therapists in the rehabilitation of patients following CVA. Patient care evaluation studies can be adapted to provide departmental standards of care, criteria for referral and discharge, and screening for the appropriateness of care. If therapists are to realize these objectives they must define a study objective and develop appropriate criteria for evaluation. Concepts of quality assurance can only be effective if incorporated into the institutional consciousness rather than superimposed upon it. A series of problems encountered during one institution's first attempt at multidisciplinary review are examined, and the resolution of these problems is discussed.

Savander, G.R. "Development of an Outcome Assessment and Informational System for Physical Therapy. A Multi-Institutional Project." Physical Therapy 57, No. 8 (August 1977):891-96.

The profession of physical therapy needs an outcome assessment and informational system developed specifically for it. The goal-oriented assessment system and data collection procedures which use electronic data processing are an attempt to satisfy that need. The purpose of this project was to demonstrate that an electronic data

processing system for physical therapy services could be adapted and implemented on a multi-institutional basis. Physical therapy departments in four community general hospitals in New Jersey implemented the program by applying the data base to all discharged patients during a six-month period. The program was again modified at the conclusion of actual use so that the requirements of all participating institutions would be satisfied. This outcome assessment and informational system can contribute to objective evaluation of physical therapy care.

Thompson, Vera. "Audit Exercise for Physical Therapists: How Physical Therapy Processes Affect Outcomes of Patients Undergoing Total Knee Replacement." Quality Review Bulletin 3, No. 6 (June 1977): 8-11. NHSQIC #70603.

An audit system is described to assess the quality of physical therapy provided to a group of patients who underwent total knee replacement. Both process and outcome criteria were used. It is important to remember that a patient's attitude and motivations may prevent him from attaining optimal health status; the audit committee must, therefore, select criteria for outcomes affected by the practitioner's or institution's performance, not those influenced by a patient's attitude. The audit should include process criteria to assess preoperative treatment and postoperative physical therapy. Both process and outcome criteria can be devised to assess the patient's status upon discharge, the follow-up care he receives, and the management of complications. Physical therapists who conduct audits should remember that quality of care is the degree to which that care conforms with generally accepted principles and practices, and the degree to which it results in outcomes permitted by the state of the art.

SOCIAL SERVICES

Blanchard, Christina G.; Hopkins, Virginia A.; Feit, Marvin; and Gearin, Louise. "Physician Utilization of Social Services in a General Hospital." Journal of the Tennessee Medical Association 72, No. 4 (April 1979):262-66. NHSQIC #01295.

Medicare and Medicaid have increased the utilization of social service departments in many hospitals but the role of the social worker and the range of social services offered are often misunderstood by physicians and therefore underutilized. Physicians see social workers more as environmental manipulators; however, social workers are also concerned with psychosocial factors. The physician utilization of the social service department of a 1,200-bed Tennessee general hospital was examined to help with future department planning.

Questionnaires were distributed to 138 staff physicians, 67 (48.5 percent) of whom responded. Almost 90 percent of the respondents knew the hospital had a social service department and 96 percent of them were satisfied with it. Discharge planning was the service most highly perceived and most often requested by physicians. Other traditional functions also were used frequently. Areas involving psychosocial services, such as counseling the patient, saw lower usage. Physicians using social services the most called on a wider range of social services. To increase usage a written description of available social services, including specific examples, was sent to each physician in the original sample. New referrals and total cases for a three-month period prior to the mailing and for the same three-month period a year later were compared. Providing additional information did seem to result in some increased physician usage.

Coulton, Claudia J. Social Work Quality Assurance Programs: A Comparative Analysis. Washington, DC: National Association of Social Workers, Inc., 1979.

The Health Quality Standards Committee of the National Association of Social Workers performed a nationwide study of existing social work quality assurance programs in 1977 to facilitate development of uniform standards for social work practice. Almost all the 27 programs examined used a consensus approach to the development of criteria and most peer review criteria examined were of the process type. The most comprehensive programs consisted of three interrelated components, patient information systems, peer review systems, and guaranteed access systems. The components of some social work quality assurance programs had direct applicability to hospital PSRO programs, and retrospective studies of social work care at times served as Medical Care Evaluation Studies. In some places, social work peer review criteria were incorporated into multidisciplinary reviews. Recommendations include the development of more uniformity in the social work profession's approach to quality assurance, participation of all social work departments in quality assurance activities, and incorporation of social work criteria into concurrent review. Future directions for social work quality assurance programs should include increased involvement in multidisciplinary and interdisciplinary reviews, increased focus on patient outcomes, incorporation of quality assurance activities into departmental operations, and addition of cost data to the information systems.

Keith, Jon G. "Hospital Social Work Audit Focuses on Discharge Planning." Hospitals 51, No. 23 (December 1, 1977):73-75. NHSQIC #80063.

Results of a hospital social work department audit of its discharge planning program are presented. Four categories of criteria were developed: justification for social work intervention, education of patient and family before discharge, outcome, and length of stay. Retrospective review of 20 patient records was conducted. Some

deficiencies in documentation were found, and an inservice education program on case recording was planned. A bimonthly concurrent review of 10 percent of all social work cases was begun, and a reaudit six months later showed nearly 100 percent compliance with the criteria.

Kohut, Susanne A. "Peer Review of Hospital Social Work." Hospital Progress 59, No. 4 (April 1978):36, 38, 40, 44. NHSQIC #80714.

The social service department of St. Vincent's Hospital and Medical Center of New York established a protocol for peer review of social work practice in 1977. The core of the peer review process is a set of detailed criteria developed and accepted by a consensus of social workers, social work assistants, and supervisory and administrative staff. The actual review is done by professional peers reviewing five records for each of ten employees per month. A copy of the evaluation is given to the worker along with a response form. A summary report is then submitted to the worker's supervisor. If a consistent pattern of variation from the criteria or substandard practice is identified, the supervisor is responsible for helping the practitioner deal with the problem. Evaluative reports are also provided to the administrators of the department and discussed at staff meetings. Throughout the development of this system, copies of the draft criteria were distributed to the staff to elicit reactions and alleviate anxiety. The first phase of implementation allowed the workers to select their own five cases for review to assuage feelings of threat and to test the criteria. Thereafter, closed files were to be selected randomly. The reviews constitute one phase of a quality assurance program for the department.

Lurie, Abraham. "Impact of Quality Assurance on Social Work: An Over-View of Current Peer Review Mechanisms." Quality Review Bulletin 3, No. 7 (July 1977):25-26, 32. NHSQIC #70858.

Social workers, long committed to quality of services, have become increasingly involved in audit programs for the implementation of federally mandated hospital peer review. Review has concentrated on the structure of hospital social services, but is now turning to audit of patient diagnosis and treatment. Multidisciplinary audit becomes necessary when the complexities of psychosocial disease treatment are reviewed. Review which crosses disciplinary lines can prevent overlapping audits and can provide for assessment of total patient care.

Lurie, Abraham. "Social Service Conducts Two Quality Assurance Programs." Hospitals 52, No. 5 (March 1, 1978):46, 48. NHSQIC #80469.

The social work service at the Long Island Jewish--Hillside Medical Center developed its own departmental peer review program to be inte-

grated with hospital wide interdisciplinary review. The team approach fosters objectivity through input from many sources. Team members benefit from the opportunity to learn how other hospital departments function; interdepartmental criteria relate well to concrete problems in patient care. Each separate service should determine whether supplementary criteria are necessary. At this center the social service developed its own criteria in a form easily understood by staff members from other departments. The center concluded that at least in the initial stages of development a quality assurance program should include both departmental and interdisciplinary review.

Reichert, Kurt. "Quality Assurance in Social Work in Hospitals: A Systems Perspective." American Journal of Public Health 69, No. 4 (April 1979):329-31. NHSQIC #00048.

Hospital social workers' vision of a working partnership between themselves and physicians has not been realized, largely because of the increasing complexity and specialization of medical care. Social workers are continuing their struggle to improve the psychosocial aspects of care, but they realize that in order to do so they must humanize the larger health care system in which they function. This article assesses the impact of recent quality assurance initiatives, and concludes that they have revealed aspects of social workers' dependence. For example, a key element in the quality of social work is the timing of the social worker's interventions, and this depends upon the hospital. The author concludes that quality assurance offers some interesting new possibilities, notably a client-centered approach to the assessment of care.

III. HOSPITAL OUTPATIENT FACILITIES

III. HOSPITAL OUTPATIENT FACILITIES

Bloomgarden, Zachary and Sidel, Victor W. "Evaluation of Utilization of Laboratory Tests In a Hospital Emergency Room." American Journal of Public Health 70, No. 5 (May 1980):525-28. NHSQIC #01222.

Visits to a metropolitan teaching hospital emergency room were evaluated for laboratory test utilization and quality of care by chart review. Of 630 tests, 197 (32 percent), clustered in 44 out of 476 (9 percent) patient visits, were considered unnecessary. The number of tests per visit showed a strong negative correlation with the necessity of tests and with the quality of care. Results suggest the usefulness of identifying a subgroup of patients with excessive tests and implementing measures to alter testing behavior for this subgroup.

Karas, Stephen. "Cost Containment in Emergency Medicine." Journal of the American Medical Association 243, No. 14 (April 4, 1980):1356-59. NHSQIC #01118.

High-cost laboratory tests, roentgenograms, medications, and supplies were the focus of a voluntary cost containment effort initiated in a community hospital emergency department. The department microcomputer determined that 100 of 1,560 possible chargeable items were responsible for 90.9 percent of the total cost to patients. Emphasis on cost containment in general and specific emphasis on the 100 high-cost items resulted in a 10.2 percent reduction in laboratory and radiology charges and a 3.3 percent total savings to patients.

Knapp, David A.; Brandon, Brenda M.; Knapp, Deanne E.; Klein, Linda S.; Palumbo, Francis B.; and Shah, Rohit K. "Incorporating Diagnosis Information into a Manual Drug Use Review System." Journal of the American Pharmaceutical Association NS 17, No. 2 (February 1977): 103-06.

In a follow-up to the development of a manual drug use review system based on dispensed outpatient prescription orders, the authors investigated the value of adding diagnosis information to prescriptions to develop more comprehensive and specific screening criteria. They collected data in January-March 1975 from four sites where pharmacists dispensed directly from medical records or prescribers included diagnosis information voluntarily: an urban neighborhood health center, a hospital outpatient pharmacy, a rural ambulatory clinic, and an Indian Health Service Hospital outpatient pharmacy. Project staff pharmacists developed criteria for diagnosis and drug match screening to supplement existing criteria for dosage and length of therapy for the 40 most frequently prescribed drugs. After outside review of the

criteria, they were applied to collected data and the results computer-processed. Diagnosis was successfully linked with over 90 percent of 3,431 prescription orders, though with triple the time when data had to be abstracted from medical records. Problems encountered were frequent misspellings, the use of nonstandard abbreviations, and, most seriously, prescribers' lack of specificity. Assuming valid diagnosis information, criteria for diagnosis and drug match screened out 26.5 percent of the prescription orders for intensive review, compared with 12.9 percent screened out by criteria for length of therapy and 12.0 percent by criteria for dosage. The dosage and therapy-length screen had identified 787 prescription orders requiring attention; the addition of the diagnosis drug screen detected an additional 703. Alternative screening criteria were established for the 10 drugs for which diagnosis was relevant to dosage or length of therapy, but only 4 percent of the prescription orders for these drugs were for alternative diagnoses. An attempt to validate diagnosis information for antibiotics was unsuccessful because of inadequate laboratory data. Diagnosis validation remains the biggest unresolved problem. There is a danger that review, rather than improving drug usage, may induce prescriber recording of "appropriate" diagnoses. Accordingly, it seems best to begin a review system with criteria related to dosage and length of therapy, which are readily available and highly productive in identifying potential problems.

Quick, Gary and Podgorny, George. "An Emergency Department Radiology Audit Procedure." Journal of the American College of Emergency Physicians 6, No. 6 (June 1977):247-50. Harris, John J. "Comments on Medical Audits" [Editorial]. Journal of the American College of Emergency Physicians 6, No. 6 (June 1977):275-76.

Because of the need to expedite patient flow, physicians in this hospital emergency department have found it necessary to read x-ray films and make dispositions before they can obtain a radiologist's interpretation. To establish standards of radiographic interpretation for emergency physicians and thereby improve the quality of emergency room treatment, they conducted an audit comparing the emergency department x-ray reading with the final radiology report. All records pertaining to the two-month audit period were screened, and a list of non-concordant readings was forwarded to the radiology department; a joint conference was then held to review specific instances of variance. Of 8,021 reports, overall concurrence of 97.6 percent was found, but chest examinations were pinpointed as a particular problem with a concurrence rate of only 22 percent. Even so, 89 percent of patients whose chest radiographs were reviewed received proper care. Commenting on the audit, Dr. Harris, a radiologist, commended the emergency and radiology departments for their cooperation, but pointed out deficiencies in the report: lack of a description of the study protocol or of the patient mix, and failure to define the "clinical significance" of a reading. Moreover, he objected to the underlying assumption that emergency physicians are capable of definitive interpretation of radiograms and he pointed out

that a radiologist's reading is free from the bias introduced by clinical involvement with the patient. He condemned those radiologists who fail to make themselves available after hours and insisted that their continuous consultation with the emergency physician is an essential of good medical practice.

Rhea, James T.; Potsaid, Majic S.; and DeLuca, Salvatore A. "Errors of Interpretation as Elicited by a Quality Audit of an Emergency Radiology Facility." Radiology 132, No. 2 (August 1979):277-80. NHSQIC #00231.

A process-oriented quality care audit was performed in a large metropolitan hospital emergency radiology facility with an annual volume of over 50,000 examinations. One aspect of the audit dealt with errors found among interpretations by radiology residents, the initial interpreters of x-ray studies. Misinterpretations were identified by staff radiologists, who checked all examinations and countersigned the reports. Error rates were correlated with duration of training and were separated as to significance and whether the errors were false-negative (omission) or false-positive (commission). The false-positive to false-negative ratio was 27:73 percent which is in agreement with previous studies. For all cases of errors, the significance of change in interpretation was high in 20 percent, moderate in 29 percent, and low in 51 percent. The effect of inadequate clinical history on the rate and significance of interpretation errors was also determined. When clinical information was inadequate, the significance was high in 25 percent, moderate in 40 percent, and low in 33 percent.

IV. LONG TERM CARE FACILITIES

IV. LONG TERM CARE FACILITIES

PHARMACEUTICAL SERVICES

Hamilton, Stephen F. "Therapeutic Problems and Nursing Home Patients." Drug Intelligence and Clinical Pharmacy 10, No. 12 (December 1976):703-07. NHSQIC #01294.

Medicare and Medicaid require pharmacist documentation of drug therapy reviews of skilled nursing facility patients, but not of patients in intermediate care facilities where such reviews are performed by registered nurses. The difference in requirements implies differences in the drug needs of the two populations. To evaluate these implied differences, a retrospective analysis of the consultant pharmacist's records was conducted in a nursing center licensed for both skilled and intermediate care. All problems identified on monthly drug therapy review and consultation notes were classified into nine categories. Retrospective analysis of both types of notes revealed no significant differences between skilled and intermediate long term care patients with respect to the number or types of problems identified. Consequently, it may be concluded that both types of patients require therapeutic monitoring. Compulsive monitoring of therapy by knowledgeable health professionals can reduce the frequency and cost of adverse drug effects which are very common among the elderly. Legislators should upgrade and revise the requirements for Medicare and Medicaid participation and pharmacists should monitor all drug therapy in long term care facilities.

Hartmann, Klaus; Allison, James; and Hartig, Paula. "Measuring Prescribing Practices in a State Mental Hospital System." Hospital and Community Psychiatry 30, No. 7 (July 1979):467-69. NHSQIC #00481.

To determine the degree to which Nebraska's three state mental hospitals complied with recognized guidelines for prescription of psychotropic medications, a study was made of 1,326 drug orders issued over a five-year period. The prescribing practices in the hospital were then reviewed in relation to the guidelines in areas of polypharmacy, daily dose frequency, time of day, use of p.r.n. orders, drug form, dosages for children and the elderly, dosages during acute and stabilized stages of illness, and brand versus generic names. The study highlighted areas of progress in drug use practices and identified areas for improvement.

Levine, Phillip J. "Quality Drug Care and Cost Containment in Long Term Care Facilities." Perspectives on Medicaid and Medicare Management (February 1980):17-23. NHSQIC #01113.

Combining quality drug care and cost containment techniques is paramount to ensuring sound long-term care management in the Medicaid program, and is crucial in providing individual patient care for residents of extended care facilities. Quality drug care must be a cooperative effort among a wide array of health and medical professionals involved in managing a health care program, including the Medicaid medical review and independent professional review teams, the consultant pharmacist, and the surveillance and utilization review unit of the Medicaid Management Information System. In a drug evaluation program, successful management techniques include establishing statistical baseline data on drug usage; listing the 25 most commonly used drugs, drug reactions and side effects, and the most common conditions requiring drug therapy; determining the use of generic and bulk purchasing; and reducing prescriptions per patient. The list of the most commonly used drugs and conditions can orient medical staff and administrators to actual problems affecting the facility, and inservice programs can focus on identified problems. A second technique for drug care management, drug utilization review, is directed toward minimizing drug interactions and adverse drug reactions. Guidelines for drug evaluation include evaluating patient admission diagnosis, patient chronologic drug records, and drug appropriateness; developing a drug monitoring procedure; and establishing a stop order policy.

Marttila, James K. and Green, Barbara A. "Auditing Antiparkinsonism Drugs: Guidelines for Appropriate Medication Use." Contemporary Pharmacy Practice 2, No. 1 (Winter 1979):11-14. NHSQIC #00661.

Results of an audit of antiparkinsonism (AP) drug use in patients receiving antipsychotic therapy prompted a study to develop and validate guidelines for monitoring the use of this drug category in a community intermediate care facility for the mentally ill in Minneapolis-St. Paul. Use of the guidelines resulted in a significant reduction of inappropriate use of antiparkinsonism drugs. The study revealed communication problems and misconceptions between the attending psychiatrists and the nursing staff, in addition to inadequate documentation in the patients' records. This study produced a simple methodology to promote appropriate antiparkinsonism drug use in a long-term care facility and a model protocol to audit antiparkinsonism drug care.

Patry, Roland A. and Kroeger, Ruth. "Drug Waste and Prescribing Patterns in Two Nursing Homes." Contemporary Pharmacy Practice 1, No. 1 (Summer 1978):28-30. NHSQIC #01241

A study of physicians' prescribing patterns in two nursing homes was conducted via retrospective chart review of 311 institutionalized geriatric patients. Drug waste resulting from the use of a traditional drug distribution system was measured by conducting an inventory of the discarded legend medication stored in the study nursing homes. Cerebrovascular or coronary disease was the most prevalent problem in those patients receiving Medicaid and/or requiring skilled nursing care. Controlled substances and drugs acting on the CNS that were prescribed on a pro re nata (PRN) basis were major contributors to the drug waste problem. Patient utilization of five doses or less for the three-month study period was recorded in 70 percent of all PRN orders. A process of drug utilization review may reduce the numbers of PRN orders prescribed to institutionalized geriatric patients and ultimately reduce patient care costs.

Segal, Jack L.; Thompson, John F.; and Floyd, Ronald A. "Drug Utilization and Prescribing Patterns in a Skilled Nursing Facility: The Need for a Rational Approach to Therapeutics." Journal of the American Geriatrics Society 27, No. 3 (March 1979):117-22. NHSQIC #90493.

A study was made of 50 patients drawn at random from a skilled nursing facility (SNF) attended by seven physicians. For 59 percent of these patients, polypharmacy was practiced but no substantiating diagnoses were recorded. Approximately half of the drugs were administered pro re nata. More drugs were prescribed in potentially toxic dosages than in subtherapeutic dosages. The risk of an adverse drug reaction (ADR) was most often associated with anticholinergic agents, sedative-hypnotic drugs, and neuroleptics (thioridazine and chlorpromazine), particularly when prescribed concurrently. Risk of an ADR was highest when a drug was prescribed without recording a definite diagnostic indication. Lack of consistency by individual physicians in their approaches to the therapy of similar disease entities in comparable patients tended to support the concept of peer review in SNFs and also the need for teaching a rational approach to therapeutics in SNFs based on clinical pharmacology as applied to the elderly.

Stewart, Jesse E.; Marttila, James K.; Kabat, Hugh F.; and Wertheimer, Albert I. "Monitoring Drug Therapy In Skilled Nursing Facility Patients." Drug Intelligence and Clinical Pharmacy 12, No. 12 (December 1978):704-09. NHSQIC #01239.

A discussion of one system designed for monitoring drug therapy in skilled nursing facility (SNF) patients is presented. This system will enable the pharmacist to fulfill the federal requirement for

monitoring drug therapy and will provide the opportunity for gathering and analyzing drug usage data in fulfillment of the facility's utilization review requirement. The system described was developed and tested at five SNF's. Follow-up studies at each of the five facilities were then performed for comparison purposes. The data presented describe and analyze the results from both studies for two of the 10 drugs studied: digoxin and hydrochlorothiazide. The high rates of nonconformance to the established criteria are discussed and specific insights as to why drug therapy in these patients often seems inappropriate are provided.

REHABILITATION THERAPY

Kulpa, Judith I. "Interdisciplinary Review on Long-Term Care." Quality Review Bulletin 4, No. 11 (November 1978):15-21. NHSQIC #01299.

Interdisciplinary rehabilitation utilizes professionals from all disciplines working together to help the patient achieve the highest attainable level of function. Implementation of interdisciplinary review of care for patients admitted to a long-term facility for rehabilitation was a natural outgrowth of weekly interdisciplinary staff meetings that were used to plan patient care and concurrently evaluate patient progress. Review procedures were designed to take advantage of the existing assessment, planning, and documentation systems. In developing criteria for evaluation, the review committee focused on functional behavior routinely evaluated at specified intervals (in skill areas including communication, socialization, mental status, and basic activities of daily living) and sought evidence in the record that optimal levels of functioning had been achieved. While the study indicated that all discharged patients were able to dress and feed themselves and perform at least one personal hygiene task, the criteria were inadequate for assessment of patients attaining complete independence. The study uncovered a lack of documentation of the level of participation in recreational activities and social functioning programs. While the guidelines failed to measure overall improvement in patients with varying degrees of severity of illness, the committee felt that it had honestly assessed the strengths and weaknesses of both the rehabilitation program and the design and application of the audit process.

INDEX TO ABSTRACTS

INDEX TO ABSTRACTS

Author Index

Abrams, H.L. 25

Allison, J. 83

Allsop, K.G. 62

American Occupational Therapy Association 62

American Physical Therapy Association 63

American Public Health Association 36

American Society of Hospital Pharmacists 37

Anderson, J.E. 25

Ayd, F.J. 40

Baker, C.L. 46

Barth, R.T. 18

Beezley, D. 3

Benziger, J. 23

Benziger, M. 23

Bernstein, M. 18

Blanchard, C.G. 70

Block, A.S. 59

Blom, B.E. 37

Bloomgarden, Z. 77

Bramson, R.T. 32

Branch, L.B. 19

Brandon, B.M. 37, 45, 51, 77

Brechenridge, K. 63

Brecher, G. 22

Brodie, D.C. 38, 42

Brown, H.S. 43

Buckingham, W.B. 59

Burke, M.D. 13

Burmeister, R.W. 3

Canfield, T.M. 23

Cantey, W.C. 60

Cantwell, K.G. 25

Carels, E.J. 3

Carey, R.G. 63

Carter, J. 3

Chamberlin, R.T. 64

Chekryn, J. 64

Childs, A.W. 26

Coarse, J.F. 51

Cole, J. 40

College of American Pathologists 13

Colton, T. 7

Cooper, J.K. 20, 53

Costello, G.E. 60

Coulton, C.J. 71

Counts, G.W. 14, 38

Cowan, R.J. 35
Craig, W.A. 39
Cross, M.L. 50
Cuthbert, G. 35
Davis, D.O. 29
Deluca, S.A. 79
Desantis, D. 44
Dillard, K.R. 39
DiMascio, A. 40
Donaldson, M.C. 7
Dorsey, R. 40
Drozada, E.A. 23
Duffy, M.G. 44
E.M.I. Medical, Inc. 27
Eagan, L.L. 39
Egan, A.M. 65
Eisenberg, J.M. 14, 15, 16
Elkhatib, M.B. 4
Evens, R.G. 27, 32
Feit, M. 70
Ferree, C.B. 35
Fineberg, H.V. 16
Fleischer, N. 57
Floyd, R.A. 85
Forrest, J.V. 32
Friedman, S.A. 52
Fuller, N.A. 17
Gagnon, J.P. 57
Garg, M.L. 4
Garner, L. 15
Gearin, L. 70
Gempel, P.A. 27
Gerken, E.H. 52
Gibson, G. 50
Gladstone, J.L. 52
Gliebe, W.A. 4
Godwin, H.N. 56
Goldfarb, S. 14
Gordon, D.L. 17
Grams, R.R. 12
Gray, J.M.B. 35
Green, B.A. 84
Greenland, P. 18
Greenlaw, C.W. 40
Gregory, J.M. 37, 40
Greig, W. 35
Griner, P.F. 18
Gudauskas, G. 49
Guze, L.B. 39
Hack, L. 65
Hall, F.M. 28
Hamilton, S.F. 83

Hansing, C.E. 18
Hardwick, D.F. 18
Harris, G.H. 27
Harris, J.J. 78
Harrison, W.L. 44
Hartig, P. 83
Hartmann, K. 83
Hazaleus, R.E. 41
Heller, A.H. 54
Hemminki, E. 41
Henry, D.A. 35
Hernandez, L. 4, 5
Hildner, J. 32
Hiser, W. 32
Hlynka, J.N. 38, 42
Hoffmann, R.P. 42
Hopkins, V.A. 70
Hospital Peer Review 54
Hotaling, W.H. 42
Howell, E. 17
Hull, J.H. 43
Hunter, E.D. 26
Idzikowski, C. 65
Institute of Medicine 28
InterQual, Inc. 60, 66
Jacobson, K.W. 19
Jones, E. 68
Kabat, H.F. 85
Kalivoda, F.J. 29
Karas, S. 77
Kass, E.H. 53
Kassirer, J.P. 6
Keith, J.G. 71
Kelly, R.J. 35
Kelly, W.N. 44
Kenders, K. 20, 53
Keys, P.W. 44
Kirchman, M.M. 66, 67
Klapp, D. 44
Klein, D. 40
Klein, L.S. 37, 51, 77
Knapp, D.A. 37, 45, 46, 51, 77
Knapp, D.E. 40, 45, 46, 51, 77
Knaus, W.A. 29
Knoben, J.E. 46, 47
Knowlton, H.C. 6
Kohut, S.A. 72
Kordick, M. 3
Kroeger, R. 85
Kulpa, J.I. 86
Kunin, C.M. 47, 48
Kuntavanish, A.A. 67

Ladon, B 23

Landers, M.S. 65, 67

Lang, G.E. 23

Larson, E.B. 30

Latorraca, R. 48

Laventurier, M.F. 56

Lawson, D.H. 35

Leopold, E.T. 39

LeRoy, A.A. 49

Levine, P.J. 84

Levitt, R.G. 33

Levy, P.A. 61

Lewis, H. 30

Lezotte, D.C. 17

Lipp, C.S. 23

Llewellyn, H.J. 31

Logue, G. 65

London, C.D. 7

Loop, J.W. 30

Lundberg, G.D. 19

Lurie, A. 72

Mahon, W.F. 60

Mansfield, M. 68

Martin, S.P. 7

Martins, R. 48

Marttila, J.K. 84, 85

Massoud, N. 49

Maynard, C.D. 35

McCormick, W.C. 49

McGowan, J.E. 50

Medical Care Evaluation Systems 61

Miller, D.E. 44

Mitchell, V.F. 18

Moore, M.C. 37

Morse, M.L. 49

Munster, A.M. 50

Murray, W.J. 43

Mushlin, A.I. 18

Nelson, H.S. 19

Nelson, R.B. 20

Newhouse, J.H. 31

Oatis, C. 65

O'Leary, D.S. 21

Omenn, G.S. 30

Ostrow, P.C. 67, 68

Palumbo, F.B. 45, 51, 77

Parker, A.J. 24

Pascals, L.A. 16

Patry, R.A. 85

Pauker, S.G. 6

Perez, C.A. 31

Peterson, O.L. 7
Pfister, R.C. 31
Piemme, T.E. 20, 53
Pierpaoli, P.G. 51
Podgorny, G. 78
Posavac, E.J. 63
Potsaid, M.S. 31, 79
Press, H.C., Jr. 25
Quality Review Bulletin 24, 69
Quick, G. 78
Raben, M. 35
Ragan, D.P. 31
Ramgopal, V. 39
Recco, R.A. 52
Reichert, K. 73
Rhea, J.T. 31, 79
Rigler, L.G. 32
Rix, D.B. 7
Roos, L.L. 64
Rose, J.D. 15
Rosenbaum, H.D. 32
Rosner, B. 53
Rutherford, H.G. 61
Sagel, S.S. 32, 33
Salzman, C. 52
Savander, G.R. 69
Schroeder, S.A. 20, 21, 29, 53
Segal, J.L. 85
Shah, R.K. 51, 77
Shapiro, M. 53
Shaw, W.R. 39
Sheiner, L.B. 22
Shepard, B.M. 61
Shulman, J.A. 50
Sidel, V.W. 77
Simpson, G. 40
Skendzel, L.P. 21
Smith, J.W. 22
Smith, W.E. 38, 42
Smits, H. 15
Solomon, D.K. 51
Spector, R. 54
Speedie, M.K. 46
Speicher, C.E. 22
Stanley, R.J. 33
Stewart, J.E. 85
Stolar, M.H. 55
Stump, G. 7
Tabatabai, C. 3
Tabel, C. 3
Thompson, J.F. 85
Thompson, R.E. 7

Thompson, V. 70

Tilton, R.C. 51

Townsend, T.R. 53

Tupin, J. 40

Turban, E. 24

U.S. Congress, Office of Technology Assessment 33

U.S. Food and Drug Administration, Bureau of Radiological Health 34

Uman, S.J. 39

Vail, J.D. 58

Vaile, R. 15

Van Der Kolk, B. 52

Vertinsky, I. 18

Vertinsky, P. 18

Vogel, D.P. 56

Wagner, J. 8

Walker, H.K. 50

Walling, R. 57

Weiner, J. 50

Weinstein, A.V. 15

Wendorf, B. 8

Wertheimer, A.I. 85

West, S. 45

Wheeler, L.A. 22

White, J.A. 44

White, S.J. 56

Williams, S.V. 15, 16

Winston, K.R. 35, 36

Wortley, D.W. 62

Yaeger, D.M. 46

Yarborough, F.F. 43, 56

Yoder, I.C. 31

Yoshikawa, T.T. 39

Zelnio, R.N. 57

Zelonis, A. 57

INDEX TO ABSTRACTS

Subject Index

Audit
- Allsop, et al 62
- American Occupational Therapy Association 62
- American Physical Therapy Association 63
- American Society of Hospital Pharmacists 37
- Blom, et al 37
- Bloomgarden, et al 77
- Buckingham 59
- Chamberlin 64
- Chekryn, et al 64
- College of American Pathologists 13
- Costello, et al 60
- Coulton 71
- Egan 65
- Eisenberg, et al 14, 15, 16
- Gordon, et al 17
- Grams, et al 17
- Hack, et al 65
- Hamilton 83
- Hartmann, et al 83
- Hlynka, et al 42
- InterQual, Inc. 60, 66
- Jacobson, et al 19
- Kalivoda 29
- Keith 71
- Kelly, et al 44
- Kirchman 66, 67
- Klapp, et al 44
- Knapp, et al 46
- Knoben 47
- Kunin 47
- Ladon 23
- Larson, et al 30
- Levy, et al 61
- Lipp 23
- Martin, et al 7
- Munster, et al 50
- Ostrow 68
- Palumbo, et al 51
- Patry, et al 85
- Potsaid, et al 31

Audit (Cont'd)
- Quality Review Bulletin 24
- Quick, et al 78
- Rhea, et al 79
- Rosenbaum, et al 32
- Segal, et al 85
- Shapiro, et al 53
- Stolar 55
- Thompson, RE 7
- Thompson, V 70
- Vail 58
- Vogel, et al 56
- Wagner, J 8
- Wheeler, et al 22

Audit, Multidisciplinary
- American Occupational Therapy Association 62
- Coulton 71
- Counts 14, 38
- Hernandez 4
- Keys, et al 44
- Knowlton 6
- Kuntavanish, et al 67
- Lurie 72
- Mansfield 68
- Ostrow 68
- Quality Review Bulletin 69
- Schroeder, et al 20
- Stolar 55
- Yarborough, et al 56

Certification
- Carey, et al 63
- Ostrow 68

Comparative Studies
- College of American Pathologists 13
- Gempel, et al 27
- Kirchman 67
- Schroeder, et al 21
- U.S. FDA, BRH 34

Cost Control
Eisenberg, et al 14, 15, 16
Karas 77
Levine 84
Zelnio, et al 57

Cost Effectiveness
Lang, et al 23
Larson, et al 30
U.S. FDA, BRH 34
Winston 35, 36

Costs
Carels, et al 3
Fineberg 16
Gempel, et al 27
Greenlaw 40
Jacobson, et al 19
Karas 77
Knapp, DA, et al 45
Knaus, et al 29
Kunin 47
Ladon 23
Larson, et al 30
Levy, et al 61
Lipp 23
Nelson 20
Patry, et al 85
Schroeder, et al 20
Thompson, RE 7
Wagner, J 8

Costs, Drugs
Craig, et al 39
Dillard, et al 39
Hlynka, et al 42
Klapp, et al 44
Knoben 46
Kunin 47
Latorraca, et al 48
LeRoy, et al 49
Recco, et al 52
Schroeder, et al 20
Yarborough, et al 56
Zelnio, et al 57

Drug Industry
Hemminki 41
Kunin 48
Zelnio, et al 57

Drugs, Antimicrobial
American Public Health Association 36
Counts 38
Craig, et al 39
Dillard, et al 39
Greenlaw, et al 40
Hazaleus 41
Kunin 47, 48
Latorraca, et al 48
McGowan, et al 50
Munster, et al 50
Pierpaoli, et al 51
Recco, et al 52
Shapiro, et al 53
Special Update: Hospital Peer Review 54
Spector, et al 54

Drugs, Psychotropic
Blom, et al 37
Dorsey, et al 40
Salzman, et al 52

Education
Kassirer, et al 6
Kunin 48
Spector, et al 54
Stolar 55
Wagner, J 8

Education, Corrective Programs
Costello, et al 60
Eisenberg 14
Eisenberg, et al 14, 15, 16
Hazaleus 41
Nelson 20
Spector, et al 54
Stolar 55

Education, Medical
Eisenberg, et al 14, 15, 16
Greenland, et al 18

Efficacy, Diagnostic
E.M.I. Medical, Inc. 27
Gempel, et al 27
Institute of Medicine 28
Kelly, et al 35
Knaus, et al 29
Larson, et al 30
Levy, et al 61
Ragan, et al 31
Sagel, et al 32
Stanley, et al 33
U.S. Congress, OTA 33

Incentives
Fineberg 16
Nelson 20
Wagner, J 8

Information Systems
Breckenridge 63
Coulton 71
Eisenberg, et al 14, 15, 16
Grams, et al 17
Hoffmann 42
InterQual, Inc. 66
Knapp, DA, et al 45, 77
Knoben 47
Kunin 47
Savander 69
Yarborough, et al 56

Length of Stay
Knapp, et al 46
Schroeder, et al 21

Medicaid
American Public Health Association 36
LeRoy, et al 49
Levine 84
Patry, et al 85
Yarborough, et al 56
Zelnio, et al 57

Outcomes
American Public Health Association 36
Blom, et al 37

Outcomes (Cont'd)
Bloomgarden, et al 77
Buckingham 59
Chekryn, et al 64
Fineberg 16
InterQual, Inc. 66
Kirchman 66, 67
Kulpa 86
Kunin 47
Kuntavanish, et al 67
Mansfield 68
Massoud, et al 49
Ostrow 68
Quality Review Bulletin 69
Savander 69
Thompson, RE 7
Thompson, V 70
Vail 58
White, et al 56

Patient Variables
Hack, et al 65
Hamilton 83
Knapp, et al 46
Levine 84
Quality Review Bulletin 69
Salzman, et al 52
Thompson, V 70
U.S. FDA, BRH 34

Practitioner Variables
Abrams 25
American Public Health Association 36
Blanchard, et al 70
Brandon, et al 37
Childs, et al 26
Costello, et al 60
Dillard, et al 39
Eisenberg 14
Eisenberg, et al 14, 15, 16
Garg, et al 4
Greenland, et al 18
Gregory, et al 40
Hall 28
Hardwick 18
Hemminki 41
Hlynka, et al 42
Knapp, et al 45, 46
Knoben 46
Kuntavanish, et al 67

Practitioner Variables (Cont'd)
Lang, et al 23
LeRoy, et al 49
Levine 84
Marttila, et al 84
Palumbo, et al 51
Quality Review Bulletin 69
Recco, et al 52
Reichert 73
Rigler 32
Rosenbaum, et al 32
Schroeder, et al 20, 21
Segal, et al 85
Skendzel 21
Spector, et al 54
Speicher, et al 22
Turban, et al 24
U.S. FDA, BRH 34
Wendorf 8
Zelnio, et al 57

Program Evaluation
Benziger, et al 23
Breckenridge 63
Carey, et al 63
Gregory, et al 40
Idzikowski, et al 65

PSRO
American Physical Therapy Association 63
American Public Health Association 36
Breckenridge 63
Coulton 71
Dorsey, et al 40
Gordon, et al 17
Grams, et al 17
Hall 28
Hotaling 42
Idzikowski, et al 65
InterQual, Inc. 60
Knapp, DA, et al 45
Knoben 47
Ladon 23
Landers 67
Lipp 23
Ostrow, et al 68
Thompson, RE 7

PSRO (Cont'd)
U.S. Congress, OTA 33
U.S. FDA, BRH 34
Wagner, J 8
Yarborough, et al 56

Reimbursement
Fineberg 16
Thompson, RE 7
U.S. Congress, OTA 33
Wagner, J 8
Zelnio, et al 57

Review, Interdisciplinary
Coulton 71
Hernandez 4, 5
Kulpa 86
Latorraca, et al 48
Lurie 72
Massoud, et al 49
Medical Care Evaluation Systems 61
Quality Review Bulletin 69

Review, Peer
Allsop, et al 62
American Public Health Association 36
College of American Pathologists 13
Coulton 71
Dorsey, et al 40
Egan 65
Hernandez 4, 5
Idzikowski, et al 65
Kohut 72
Landers 67
Latorraca, et al 48
LeRoy, et al 49
Mansfield 68
Ostrow 68
Ostrow, et al 68
Stolar 55
Wagner, J 8
Yarborough, et al 56
Zelonis, et al 57

Review, Utilization
Allsop, et al 62
Cantwell, et al 25
Counts 14, 38
InterQual, Inc. 60
Kalivoda 29
Ladon 23
Latorraca, et al 48
Lipp 23
Recco, et al 52
Sagel, et al 32
Stolar 55

Standards of Care
American Occupational Therapy Association 62
American Physical Therapy Association 63
American Public Health Association 36
Blom, et al 37
Brandon, et al 37
Brodie, et al 38
Buckingham 59
Cantwell, et al 25
Carey, et al 63
College of American Pathologists 13
Costello, et al 60
Coulton 71
Counts 14
Dorsey, et al 40
Gordon, et al 17
Gregory, et al 40
Hack, et al 65
Hazaleus 41
Hotaling 42
InterQual, Inc. 60, 66
Kalivoda 29
Keith 71
Knapp, DA, et al 45, 77
Kohut 72
Kulpa 86
Kunin 47
Ladon 23
Lipp 23

Standards of Care (Cont'd)
Lurie 72
Marttila, et al 84
McGowan, et al 50
Medical Care Evaluation Systems 61
Ostrow 68
Palumbo, et al 51
Quality Review Bulletin 24, 69
Stolar 55
Thompson, V 70
Turban, et al 24
U.S. FDA, BRH 34
Wagner, J 8
White, et al 56
Zelonis, et al 57

Tests, Interpretation
Burke, MD 13
Quick, et al 78
Rhea, et al 79
Skendzel 21
Speicher, et al 22

Tests, Routine
Carels, et al 3
Eisenberg, et al 14, 15, 16
Fineberg 16
Levy, et al 61
Rix, et al 7
Sagel, et al 32
Thompson, RE 7

Underutilization
Blanchard, et al 70
Gordon, et al 17
Wheeler, et al 22

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